GETTING STARTED IN

FUTURES

THIRD EDITION

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TODD LOFTON

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GETTING STARTED IN FUTURES

This accessible and user-friendly guide is ideal for investors who are new to futures. Covering the full range of markets, from grains and metals to petroleum and financial futures, *Getting Started in Futures* tells you in plain, simple terms how margins are set, how an order is handled in the trading pit, the steps a producer or user must take to effectively hedge a cash commodity, and how to use the futures markets to your own personal or business advantage.

- **Covers new futures contracts, such as one-month LIBOR futures on the International Monetary Market**
- **Includes specific, market-proven techniques for price forecasting**
- **Provides clear guidelines for effective money management**
- **Explains the different futures market orders and how they are used**
- **Tells you where each major commodity is produced, who makes it, and what factors affect its supply and demand**
- **Details on futures and the Internet—tapping into price charts, research reports, intraday and closing prices, and much more**

TODD LOFTON is a past member of the Chicago Board Options Exchange and a popular speaker and writer on the subject of futures. He was president of Investor Publications, and the first publisher and editor of *Commodities* (now *Futures*) *Magazine*. Mr. Lofton received his master's degree in financial management from the U.S. Naval Postgraduate School.

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Getting Started in Futures

THIRD EDITION

Todd Lofton

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To my wife, Barbara, who bought one contract of silver coin futures 25 years ago, sold it 3 weeks later for a $750 profit, bought a color TV, and retired from the markets

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Preface

If you want to know how the futures markets work, you've come to the right place. The information is all here, in plain English. The first few chapters introduce you to the players. Then you learn some of the basics, such as how to read the prices in the newspaper. The next section shows you how to interpret market behavior. This is followed by discussions of the relatively new futures markets in financial instruments; and, the most recent innovation, options on futures. Chapter 16 presents a thumbnail description of each major commodity, telling you how it is produced, how it is used, and where you can turn for further information.

By the time you turn the last page, you'll know:

- ✔ How to establish now the price you'll pay for T-bonds next year
- ✔ How to use technical analysis to protect a profit or cut a loss
- ✔ How to ensure that the major foreign currency you will receive in 6 months will be worth as much then as it is now
- ✔ What type of order to use in each market situation
- ✔ How to use futures options to limit your market risk absolutely
- ✔ And much more.

WHAT'S NEW?

This is the third edition of *Getting Started in Futures,* and things ain't what they used to be.

First, we have added several new futures markets to the mix. These are futures contracts that have come of age since our last writing, such as 1-month LIBOR futures on the International Monetary Market. (LIBOR stands for London InterBank Offered Rate; it's the interest rate that banks charge each other for short-term loans.)

We've updated our "suggested reading" references at the end of each chapter, so you will have the most current source if you want to dig deeper into a particular subject.

The biggest change, however, is a ticket to cyberspace. Chapter 17 tells you how to tap into the wealth of free futures information that's available on the World Wide Web. It shows you how to get aboard the Internet—if you're not aboard already—and lists some of the best sites to explore. It shows you how to put price charts, technical analysis, research reports, live market commentary, intraday and closing prices, and more right at your fingertips, at the keyboard of your personal computer.

WHAT'S NOT?

Just as important about this third edition is what we have not changed. This is still the most readable book ever published on the subject. There's no jargon or gobbledygook. There are no complex mathematical formulas. You'll find a simple, everyday example for every important point—sometimes more than one example, to make sure you understand.

Also unchanged are the valuable insights you will glean from these pages. You'll learn the roles of the speculator, the hedger, and the exchange. You'll come to understand price forecasting. You'll appreciate the overwhelming importance of good money management.

You'll be a more successful market participant.

KUDOS, ETC.

Catalysts for this book are my mentors at John Wiley & Sons: Publisher Myles Thompson and Associate Editor Jacqueline Urinyi. They have invariably had words of good counsel and encouragement.

Perry Kaufman and Mark Powers, authors and lightning rods in the field of futures, have offered valuable suggestions along the way.

I also want to thank Robert W. Hafer, who graciously provided the price charts shown throughout the book. Mr. Hafer is the publisher of *CRB Futures Perspective*, a weekly service providing up-to-date price charts and futures market commentary. It is produced by BRIDGE Information Systems (formerly Knight-Ridder Financial) at 30 South Wacker Drive, Suite 1810, Chicago, IL 60606.

As before, I am beholden to the several exchanges for their kind cooperation in providing me with information about their new products and services. I know they get some mileage out of it, of course, but I am always pleasantly surprised at how gracious they are when I come knocking, full of questions.

One last word: The world of futures is not a male enclave, and I don't mean to imply that it is. I use the male pronoun throughout to avoid constant repetition of the phrase *or she*. The increasing presence of women as successful exchange members, traders, market analysts, and corporate executives is not lost on me. It is not my intention to slight them.

Any goof-ups you find in here you can blame on me.

TODD LOFTON

McLean, Virginia
May 1997

Contents

Chapter 1

Introduction

Suppose that you and I lived in rural Iowa. I raise beef cattle. You raise corn 15 miles down the road. Each fall, when your corn comes in, you truck the entire crop to me, and I buy it to feed to my steers. To make things fair, we agree that I will pay you the cash price for corn on the Chicago Board of Trade on the day I take delivery.

Corn is important to both of us. It is your principal crop; it is my main cost in feeding cattle. I hope for low prices. All summer long you are praying that something benign—an unexpected Russian purchase, for example—will send corn prices up.

One spring day you come to me with a suggestion. "Let's set our corn price now for next fall," you say. "Let's pick a price that allows each of us a reasonable profit and agree on it. Then neither of us will have to worry about where prices will be in September. We'll be able to plan better. We can go on about our business, secure in the knowledge of what we will pay and receive for the corn."

I agree, and we settle on a price of $3.00 a bushel. That agreement is called a forward contract—a "contract" because it's an agreement between a buyer (me) and a seller (you); "forward" because we're going to make the actual transaction later, or forward in time.

It's a good idea, but it's not without flaws. Suppose the Russians did announce a huge surprise purchase, and corn prices went to $3.50. You would be looking for ways to get out of the contract. By the same token, I

would not be too eager to abide by our agreement if a bumper crop caused corn prices to fall to $2.50 a bushel.

There are other reasons why our forward contract could fail to be met. A hailstorm could wipe out your entire corn crop. I could sell my cattle-feeding operation, and the new owner not feel bound by our agreement. Either one of us could go bankrupt.

Futures contracts were devised to solve these problems with forward contracts, while retaining most of their benefits. A futures contract is simply a forward contract with a few wrinkles added.

Chapter 2

Basic Terms and Concepts

There are some basic concepts that you should understand if you are going to deal with the futures markets. The first is the futures contract itself. In the Introduction we stated that a futures contract is simply a forward contract with some added wrinkles. One of those wrinkles is *standardization.*

A forward contract can be written for any commodity. It can also be written for any amount or delivery time. If you want to make a deal to buy 1400 bushels of silver queen corn for delivery to your roadside stand next July 2, you can do it with a forward contract. You can't in the futures market.

A futures contract is for a specific grade, quantity, and delivery month. For example, the futures contract for corn on the Chicago Board of Trade (CBOT) calls for 5000 bushels of No. 2 yellow corn. Delivery months are March, May, July, September, and December. There are no other delivery months and no other contract sizes available. All futures contracts are standardized in this way. That's done to make specific futures contracts interchangeable. Grade, quantity, and delivery months are specified by the exchange when they design the contract. Only the price is left to be determined.

A futures contract is a standardized forward contract that can be broken by either party with simply an offsetting futures market transaction.

Another difference is where business may be done. A forward contract can be drawn up anywhere. Futures contracts are bought or sold only the exchange trading floor by members of the exchange.

Money

Three other differences between a forward contract and a futures contract involve the important matter of money. If two parties make a forward contract, no money need change hands until the cash transaction is completed at a later date. If you buy a futures contract, you will have to put up *margin* money. This is not a down payment, and no money is borrowed, as in stocks. It is a good-faith deposit, or "earnest money," to demonstrate your intention to pay for the commodity in full when it is delivered.

If you buy a futures contract and cash prices go up, so will the price of your futures contract, as they tend to move together. In that event you would have an *unrealized* profit in your futures account. Without closing out the futures position, you may withdraw this profit in cash and use it for whatever you wish. This is not possible with a forward contract.

You will have to pay your broker a *commission* for handling the futures transaction for you. There is no commission in a forward contract.

An Exit

One of the most important qualities of a futures contract is its *escapability*. If you enter into a forward contract and later decide you want out, the other party would also have to agree to break the contract. If he won't, you're stuck. If you buy a futures contract and later decide that you don't want to be a party to it anymore, you can close our your position and wipe the slate clean by simply selling the same futures contract. (Now you can see why it is important that futures contracts be interchangeable.)

Futures provide other, broader economic benefits that probably won't affect you directly. Because they trade actively, futures markets are constantly "discovering" the current price for the particular commodity. These prices are disseminated around the world within seconds. If you want to

make a futures transaction, there's no need to search for a buyer or seller. There are virtually always buyers and sellers (or their representatives) waiting on the exchange trading floor; the only question is price. Most futures markets, by providing for alternate delivery of the actual cash commodity, also provide a safety valve for producers who for some reason cannot deliver their actual commodity through normal supply channels.

THE LONG AND SHORT OF IT

Before we talked only about buying a futures contract. That's known as being *long*, or having a *long position*. The holder of a long futures position may receive delivery of the actual commodity if he holds the futures position into the delivery period.

You may have also heard the term *short*. The rules surrounding futures trading allow you to sell a futures contract before you buy it. When you do, you are said to be short futures, or have a *short position*. You will be expected to deliver the actual commodity if you hold a short futures position into the delivery period. To close out a short futures position, you buy an identical futures contract on the exchange. You would then be out of the market altogether.

The idea of a short position may be confusing because it involves selling something you don't have. Actually, you may already have participated in a short sale without being aware that you were doing so. If a car dealer doesn't have the car you want on his lot and orders one for you from the factory, he has sold the car short. Furniture is often sold (short) by a retail store before the items are manufactured.

In futures, there is a short position for every long position.

Why would someone want to sell a futures contract short? To establish his selling price, because he believes the market is headed lower and that he will be able to buy the futures contract back later at a lower price. Regardless of which transaction came first, the profit or loss in a futures trade is the difference between the buying price and the selling price.

Who's long and who's short is one of the biggest differences between the futures markets and the stock markets. Most stock investors buy

shares. They hold them for dividends and price appreciation. Only the most sophisticated investors sell stocks short. It is conceivable, therefore, that everyone who owns a certain stock has a profit in it. For example, let's say that General Motors stock advanced from $68 to $69 in today's trading. If there are no short positions in the stock and no present stockholder paid more than $68 a share, everybody involved with GM stock would have a profit. And they would all have just seen their profits increase by $1 per share.

That's not true in futures. In futures, there is a short position for every long position. If you are out of the market and decide to buy a futures contract, another market participant must take the other side and sell it to you. If you sell a futures contract short, somebody somewhere must take the other side and buy it from you. That's the only way a futures contract can be created. Gains on one side of the futures markets therefore come out of the pocket of someone on the other side of the market; what the longs win, the shorts lose, and vice versa. It may serve as a sobering thought: If you take money out of the futures markets, it's not coming out of thin air; you're taking it from another player.

If you gain a profit in a long futures position, a short somewhere has lost the same amount.

PRICES

Cash versus Futures

The *cash* or *spot* price of a commodity is the price at which the actual commodity is currently being bought or sold in the marketplace. The *futures* price is the price at which futures contracts are changing hands. Cash and futures prices for a particular commodity do not stray too far from each other. If the cash price of a commodity goes up or down, its futures prices tend to follow. But cash and futures prices do not all necessarily move together penny for penny. The reason is that different forces are at work on the two prices.

Cash prices respond to the present supply of and demand for the actual commodity. If there is an immediate shortage of a certain commodity,

its price will be bid up by processors, distributors, and others who use it in their course of business. If the commodity is in abundant supply, its cash price will fall.

Futures prices respond to changes in the cash price. The futures price most affected by a change in the cash price is that of the nearest delivery month because it will soon be virtually the same as the cash price. Distant futures months are less responsive, perhaps because traders feel that whatever is affecting the cash price now may not be a factor later.

Cash prices respond to the supply of and demand for the actual commodity. Futures prices respond to changes in the cash price and to traders' expectations.

These are not the only winds blowing on futures. Futures prices are also driven by traders' *expectations*. The mere threat of drought or crop disease or labor strike can send futures prices up long before the actual event materializes. An example of the power of traders' expectations can be seen in Figure 1, which is a price chart for November soybeans on the CBOT.

Price Charts

The chart in Figure 1 is called a *bar chart*. Figure 2 is a more complete example; it shows daily price action, volume, and open interest for December New York gold futures over a 7-month period.

Each day's price activity is represented by a vertical line; the top of the line marks the day's high price, the bottom of the line the day's low price. The closing or settlement price is denoted by a short "tick" mark extending to the right of the vertical line. Futures prices are on the right-hand scale.

The calendar across the bottom shows only weekdays; that is, the weekends are omitted, so the price action has a continuous appearance. The vertical bars extending upward from the bottom are daily trading volume, read on the lower right-hand scale. The two horizontal lines meandering across the chart from left to right represent open interest (the number of outstanding futures contracts) and are read on the lower left-

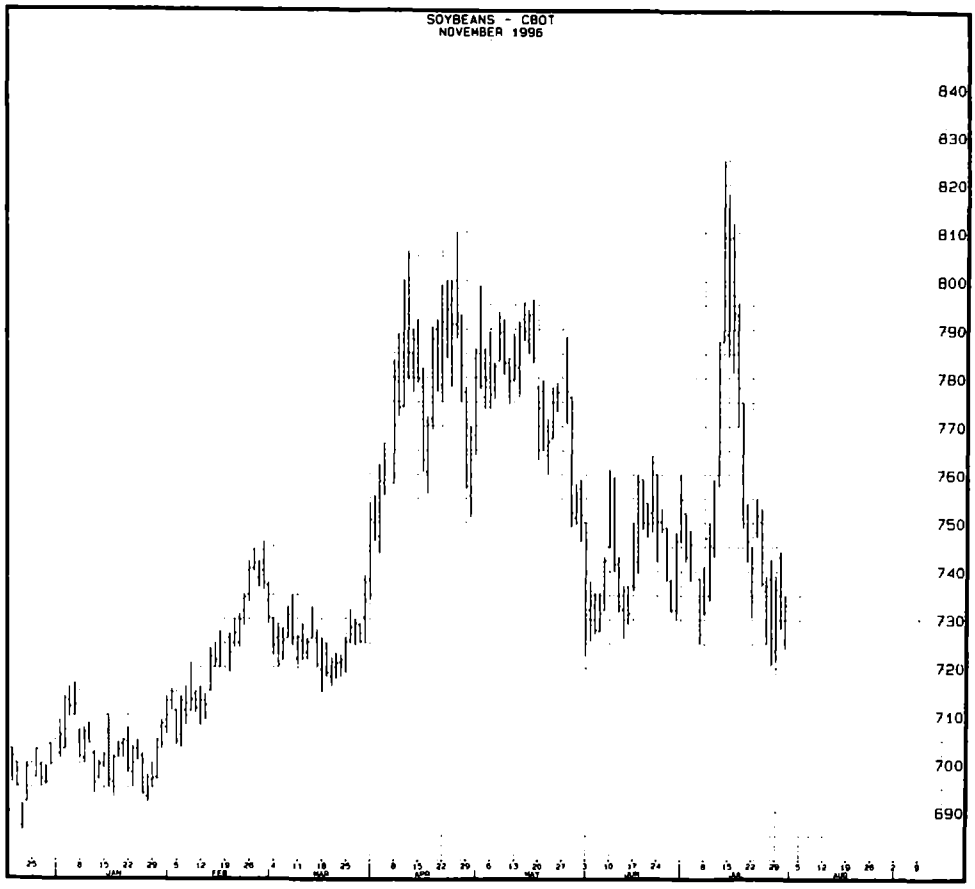

Figure 1 The power of traders' expectations can be seen in this price chart for November 1996 soybeans. Small carryover and rumored low yields for the current crop sent prices skyrocketing in mid-July. When the dangers were discounted, the market fell straight back to earth. What traders thought might happen triggered a round trip of $2.00 a bushel—$10,000 per contract—in only 7 trading days. Chart courtesy of *CRB Futures Perspective*, a publication of BRIDGE Information Systems.

hand scale. The broken horizontal line is the 5-year average open interest in New York gold futures. The solid horizontal line above it shows current daily open interest.

Price charts are economic shorthand, enabling you to compare several weeks or months of past price action at a glance. Most traders use price charts at one time or another, and some key their entire trading strategy to the interpretation of price movements.

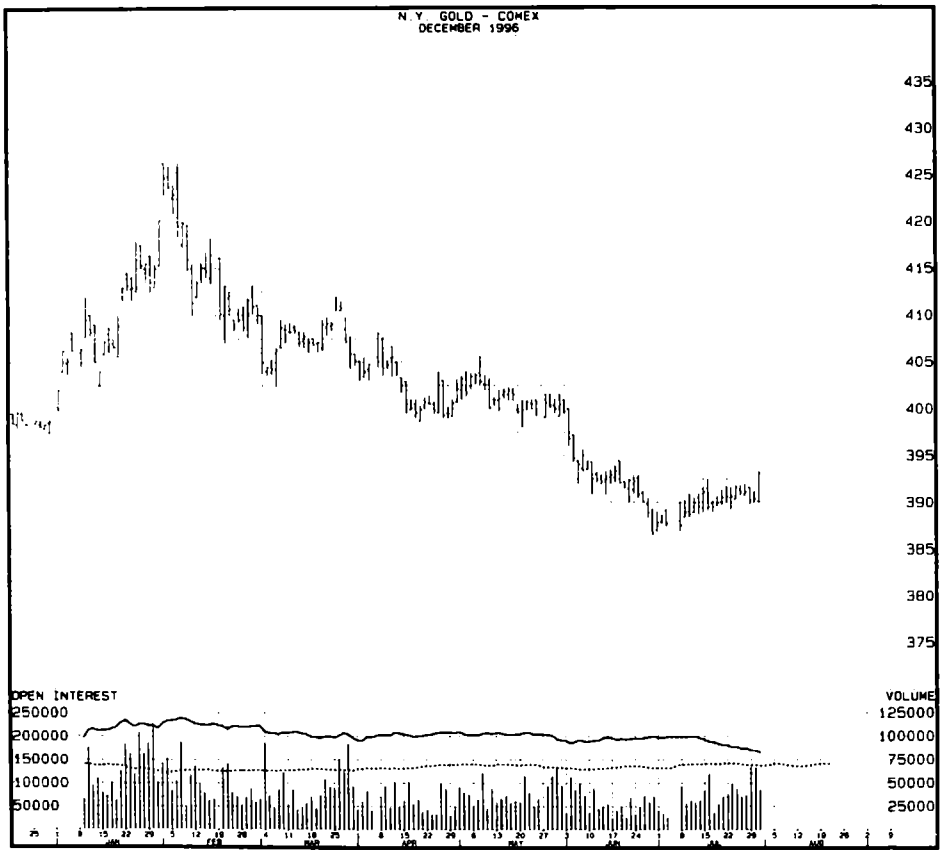

Figure 2 A typical bar chart, the most widely used chart. It shows several months of price activity, enabling a comparison between present and past price levels. Shown at the bottom of the chart are daily trading volume and open interest, analysis of which can reveal who's doing the buying and selling. Chart courtesy of *CRB Futures Perspective*, a publication of BRIDGE Information Systems.

THE NECESSARY ARBITRAGE

For a futures market to do its job, the cash price and the futures price of a given commodity must meet during the delivery period. If the two prices did not come together, hedging—the economic reason for all futures markets—would be impossible.

To ensure that cash and futures are virtually equal when the futures contract matures, the exchanges have historically provided for delivery of

the actual commodity in satisfaction of a short futures position. Then, if cash prices should range too far above nearby futures prices, for example, arbitrageurs in the trade would buy the nearby futures, take delivery against the futures contract, and sell the cash commodity thus received in the spot market for a certain profit. This action by arbitrageurs would put downward pressure on cash prices and upward pressure on futures, moving the two prices back together again.

Conversely, if nearby futures prices move far enough above the cash price to make it profitable, arbitrageurs would sell the futures, buy the cash commodity, store it, and deliver it against the futures contract. This action would continue until cash and futures prices moved closer together, erasing potential arbitrage profits.

An example from agriculture may make this arbitrage process easier to understand. We'll use the (fictitious) Breadstuff Grain Company of Omaha, Nebraska. The vice president of the company is always on the lookout to make extra profits, particularly when he happens to have some idle storage space. He knows that the total cost for Breadstuff to store actual wheat is 8 cents per bushel per month. That includes transportation, insurance, warehouse rent, interest on the money involved, and an allowance for possible spoilage. His commission on a futures transaction is 1 cent per bushel. And he has decided that he wants at least 3 cents per bushel profit for his trouble.

He watches futures prices carefully for arbitrage opportunities. In fact, he has his desktop computer programmed to track futures and cash prices and to buzz him when the spread reaches a point where the cost of storage, commissions, and a 3-cent minimum profit would all be covered.

One morning his computer buzzes, and he sees that wheat futures 1 month distant are at a premium of 13 cents a bushel to cash wheat. It would cost him 8 cents storage + 1 cent futures commission = 9 cents per bushel to carry the hedged cash wheat for that month. The futures price thus offers a potential arbitrage profit of 13 – 9 = 4 cents per bushel, a windfall. He immediately sells the 1-month wheat futures, placing a limit on the price he will accept. That done, he buys an equivalent amount of cash wheat and has it delivered to his warehouse.

With these actions he has, for all practical purposes, locked in a profit of 4 cents per bushel. One month later he delivers the cash wheat in satisfaction of his short futures position and is paid in full for it.

How can there be such price distortions? Why wouldn't everyone take advantage of an opportunity like that? For several reasons: (1) Breadstuff Grain Company had the storage space available; (2) it also had good access

to the cash grain market, allowing the actual grain to be moved in and out without excessive cost or delay; and (3) Breadstuff Grain was paying attention. Other members of the trade may not have been aware of the situation. Breadstuff's computer not only displayed up-to-the-second prices, it was programmed to alert the company when conditions were favorable.

VOLUME AND OPEN INTEREST

Trading volume is the number of futures transactions that took place during a certain period. For example, if you bought a futures contract today, you would add 1 to today's trading volume. One contract would have changed hands, from the seller to you. If later today you decided to sell it, you would add another unit to today's trading volume. When you pick up the newspaper tomorrow morning and see that trading volume in that commodity was 4105 contracts, you know that you were personally responsible for two of them.

Open interest is the number of *outstanding* futures contracts, or the total of short and long positions that have not yet been closed out by delivery or by offsetting futures markets transactions. Your two transactions could have changed the open interest, but not necessarily. As you will see later, it depends on which player took the other side of your trades. The idea of open interest is unique to the futures and options markets. There's nothing comparable in stocks or bonds.

THE CLEARINGHOUSE

Each futures exchange has its own clearinghouse. Some are separate and distinct from the exchange itself; others are departments within the exchange. Membership is available only to members of the exchange. In addition, clearinghouse members must meet very strict financial requirements.

The functions the clearinghouse performs are vital to the efficient operation of the futures markets. It is the clearinghouse that makes it possible to close out a futures position with simply an offsetting futures market transaction. It does so by breaking the tie between the original buyer and seller. At the end of every trading day, the clearinghouse becomes the buyer to every seller and the seller to every buyer. Either party can therefore close out his futures position through the clearinghouse, without having to locate and obtain the agreement of the original second party.

The clearinghouse makes it possible to close out a futures position with simply an offsetting futures market transaction.

The accounts of the clearinghouse show the numbers of long and short positions held by each clearing member, not by individual customer name. If you sell to get out of a long position, the clearinghouse balances your sale with a purchase made that day. You'll never know (and don't care, really) who was on the other side of your transaction.

The clearinghouse also has other important responsibilities, including supervising the delivery of actual commodities against a short futures position and guaranteeing the financial integrity of each futures contract it clears.

We'll take a closer look at open interest and the operation of the clearinghouse in later chapters.

SUGGESTED READING

Futures and Options Course. Futures Industry Association, Washington, DC, 1995.

Chapter 3

Futures Markets Today

There is a wide variety of active futures markets today, many of which are for "commodities" that could not possibly have been envisioned when the first futures contract for corn was traded in Chicago in the early 1800s. For ease of discussion, it's best to group them, as follows:

Grains: Wheat, corn, oats, soybean complex (soybeans, soybean oil, soybean meal).

Meats: Live cattle, feeder cattle, hogs, pork bellies.

Metals: Platinum, silver, high-grade copper, gold.

Foods and fibers: Coffee, cocoa, sugar, orange juice, cotton.

Interest rate futures: Treasury bonds, Treasury bills, Treasury notes, Eurodollars, 30-day Federal Funds, LIBOR.

Foreign currencies: Swiss franc, deutsche mark, British pound, Japanese yen, Canadian dollar, Mexican peso, Australian dollar.

Index futures: S&P 500 Stock Index, S&P MidCap 400 Stock Index, Nikkei 225 Stock Average, NASDAQ 100 Stock Index, Goldman Sachs Commodity Index, Municipal Bond Index, U.S. Dollar Index.

Energy futures: Crude oil, heating oil No. 2, unleaded gasoline, natural gas.

Wood: Lumber.

Following is a typical report of one day's trading in one futures market, such as you might find in the financial section of your daily newspaper. As you can see, it contains a great deal of information:

Wheat (CBOT); 5000 Bushels; Cents per Bushel

Delivery	*Open*	*High*	*Low*	*Settle*	*Change*
December	338½	341	338¼	340	+2½
March	343½	346	337	336½	+3
May	339½	341½	339½	340¾	+2¼
July	328	329½	327	317¼	+1¾
September	332½	332¾	332	332	+1¾
December	338¼	340	338¼	340	+1¾

Est. sales 26,000; Prev. sales 28,473; Open int. 68,816; Change +897

The top line identifies the commodity and provides information about the futures contract. It shows the exchange where the futures contracts are traded (CBOT stands for the Chicago Board of Trade). It also shows the size of the futures contract (5000 bushels). The last item in that line explains that prices in the table are expressed in cents per bushel.

The second line identifies the columns. In the far left column are the delivery months. Chicago wheat futures are traded for delivery in March, May, July, September, and December. Notice that delivery months extend out to 1 year ahead. Each futures market has its own delivery months and schedule of longevity. Cocoa futures, by comparison, mature in March, May, July, September, and December and come on board 18 months before maturity.

The second column shows the opening price for each contract that day. In the next four columns are the day's high price, the day's low price, the day's settlement price, and the change from yesterday's settlement price.

The bottom line shows today's estimated trading volume; yesterday's actual trading volume; yesterday's total open interest in Chicago wheat; and the change in open interest from the previous day.

To interpret the prices, you add a decimal point. A price of 340, for example, means $3.40 per bushel. The minimum price change is ¼ cent per bushel. To calculate a change in equity caused by a price change, you

must take into consideration the contract size. For example, if you had been long one futures contract of nearby December wheat that day, the value of your equity would have increased 2½ cents per bushel; 2½ cents × 5000 bushels = $125.00. If you had been short one futures contract of December wheat, you would have had an unrealized loss of $125.00. If it's easier for you, you can simply remember that 1 cent = $50.

The size of the futures contract for all grains and for soybeans is 5000 bushels. Prices of all grains and soybeans are expressed in cents per bushel, and 1 cent equals $50 in equity.

Let's take a look at the meats:

[redacted]; Cents per Pound

Delivery	*Open*	*High*	*Low*	*Settle*	*Change*
December	75.30	75.57	74.95	75.42	+1.35
February	72.00	72.57	71.87	72.47	+1.35
April	74.50	75.00	74.35	74.67	+.80
June	74.40	75.15	74.40	74.72	+.62
August	72.10	72.65	72.00	72.07	+.45
October	71.50	71.90	71.30	71.40	+.45
December	72.45	73.00	72.45	72.90	+.60

Est. sales 19,858; Prev. sales 16,260; Open int. 77,110; Change –748

The cattle futures contract on the Chicago Mercantile Exchange (CME) is for 40,000 pounds of live cattle, and prices are expressed in cents per pound. A price of 71.87, for example, means 71.87 cents per pound. If you had been long one contract of February cattle that day, you would have had an unrealized profit of 1.35 cents per pound, or $540 ($.0135 × 40,000 pounds). For shorthand, simply remember that a 1 cent change in cattle futures prices causes a $400 change in equity.

Futures prices for live cattle, feeder cattle, hogs, and pork bellies—which comprise the meat futures—are all expressed in cents per pound. However, the minimum "tick" (price change) is 2½ cents per pound. The prices of 75.52 and 75.57 are really 75.52½ and 75.57½. The "½" is omitted in the table to reduce clutter. The last digit of all meat futures prices is therefore always 0, 2, 5, or 7.

Here are prices for the most well known of the metal futures contracts:

Gold (COMEX); 100 Troy Ounces; Dollars per Troy Ounce

Delivery	*Open*	*High*	*Low*	*Settle*	*Change*
December	361.00	362.30	357.00	358.50	-1.60
February	366.30	367.40	359.80	360.40	-1.60
April	373.50	374.00	366.50	367.10	-1.50
June	379.80	381.00	374.00	374.60	-1.40

COMEX stands for Commodity Exchange, Inc., which is a division of the New York Mercantile Exchange. The futures contract calls for delivery of 100 troy ounces of pure gold, and prices are expressed in dollars per troy ounce. A futures price of 358.50 thus means $358.50 per troy ounce. The minimum price change is 10 cents per troy ounce, which represents a change in equity of $10 per futures contract ($.10 × 100 = $10).

Metal futures contract sizes and prices are not uniform, as the following list shows:

Copper: 25,000 pounds; cents per pound.

Platinum: 50 troy ounces; dollars per troy ounce.

Palladium: 100 troy ounces; dollars per troy ounce.

Silver: 5000 troy ounces; cents per troy ounce.

Prices for futures in U.S. Treasury bonds are expressed in an entirely different way:

Treasury Bonds (CBOT); $100,000; Points and 32nds of 100%

Delivery	*Open*	*High*	*Low*	*Settle*	*Change*
December	94-20	95-07	94-20	95-05	+14
March	93-19	94-07	93-16	94-05	+14
June	92-19	93-09	92-19	93-07	+14
September	91-29	92-13	91-27	92-12	+13

Treasury bond futures are traded on the CBOT. The asset underlying the futures contract is $100,000 worth of T-bonds. T-bond futures prices are expressed in points and 32nds percent of par. The digits after the dash are therefore not decimals but number of 32nds. A price of 93-20, for example, means 93 percent of $100,000 plus $^{20}/_{32}$ of 1 percent of $100,000.

The minimum price change of $^1/_{32}$ of 1 percent equals $31.25 ($1000 divided by 32). A trader with a long position in CBOT March T-bonds, for example, would have had an unrealized gain of $^{14}/_{32}$ on this day, or 14 × $31.25 = $437.50. A short somewhere would have had a mirror image unrealized loss of $437.50. Prices for 10-year Treasury note futures and municipal bond index futures are expressed in the same way.

Foreign currency futures are also irregular. The table shown here is for the deutsche mark, one of the most widely traded foreign currency futures contracts:

German Mark (IMM); 125,000 Marks; Dollars

Delivery	*Open*	*High*	*Low*	*Settle*	*Change*
December	.6158	.6158	.6149	.6156	+0025
March	.6228	.6233	.6195	.6206	+.0004
June	.6290	.6296	.6293	.6272	+.0004

Futures contracts in the German mark are traded on the International Monetary Market (IMM), an affiliate of the CME. The futures contract size is 125,000 marks. Futures prices represent dollars per mark; that is, prices shown are the cost of one unit of the foreign currency in U.S. dollars. Deutsche marks are at this time selling at about 62 cents apiece.

The other active foreign currency futures and their specifications are:

Currency	*Contract Size*	*Prices Expressed in*
Swiss franc	125,000 francs	Dollars per franc
British pound	62,500 pounds	Dollars per pound (sterling)
Canadian dollar	100,000 dollars	Dollars (U.S.) per dollars (C)
Mexican peso	500,000 new pesos	Dollars per peso
Australian dollar	100,000 dollars	Dollars (U.S.) per dollars (A)
Japanese yen	12.5 million yen	Dollars per yen (.00 omitted)

Of these, the last could give you trouble in interpreting, so let's take a closer look. The following are representative futures prices for the Japanese yen:

Open	High	Low	Settle	Change
.7608	.7637	.7600	.7603	-.0010

In Japanese yen futures prices, two zeros are omitted right after the decimal point to keep the numbers manageable. The approximate cost of 1 Japanese yen in U.S. currency is not 76 cents, but 76/10,000 of a cent, or $.0076. The change of .0010 that day was really a change of $.000010 per yen. That number multiplied by the contract size of 12.5 million yen equals a change in equity of $125 that day, a modest move.

The final prices we will show you in this chapter are for S&P 500 Stock Index futures:

S&P 500 Index (CME); $500 Times Index

Delivery	Open	High	Low	Settle	Change
December	675.40	684.40	675.20	684.00	+8.55
March	675.90	685.00	675.90	684.80	+8.65
June	677.05	687.25	677.05	686.35	+9.05

Futures contracts in the S&P 500 Stock Index are traded on the CME. Because all stock index futures are settled in cash, the size of the futures contract is not fixed but is equal to $500 times the present value of the index. Each 1.00 change in the futures price therefore represents a $500 change in the total value of the futures contract.

This table shows unusually volatile price activity. A speculative long position in the March delivery month, for example, would have earned an unrealized gain of $4325 that day!

The futures contracts we have presented in this section are those that represent large groups of futures or that are irregular. There are several other futures contracts that we have not mentioned here, including the minicontracts traded on the Mid-America Commodity Exchange and those traded on overseas futures markets. Specifications for each active U.S. futures contract, along with a description of the fundamental factors that influence its price, may be found in Chapter 16.

NORMAL AND CARRYING CHARGE MARKETS

Futures prices for all delivery months of a particular commodity tend to move together. After all, the same commodity underlies December T-bills and March T-bills, February cattle and April cattle, March corn and May corn.

Futures prices for different delivery months of the same commodity do not always move together. Although there are other causes, the major reason for the divergence is seasonality.

Nevertheless, different delivery months of the same commodity do not always move in lockstep. One reason for the difference is seasonality. For example, the harvest for winter wheat in the United States takes place in late May and June. May wheat futures contracts mature before the harvest, when cash prices depend on old-crop supplies; July wheat futures mature after the harvest, when a new supply of the actual grain will be on hand. As a result, a rally in the May wheat might not be matched in the July wheat.

Petroleum futures provide another example. Because the demand for heating oil is greater in winter, cash prices tend to firm then; futures traders anticipating this effect may drive the prices for January and February futures contracts up above those for the warmer months.

Livestock are a special case. Live cattle and hogs cannot wait around long after they have reached marketable weights; they must be sold. The futures price for each delivery month in these two markets therefore anticipates the pending supply of live animals for that particular time period. A delivery month with a large pending supply will tend to be relatively weaker than one with a fewer number of animals in the pipeline.

Trading tactics may also cause a divergence. Some traders buy one delivery month of a commodity and simultaneously sell another delivery month of the same commodity. Their actions cause the delivery month bought to gain on the delivery month sold.

Certain delivery months of a commodity simply attract a large following. December cotton shows high volume and open interest even in the spring, when December is a distant month. The U.S. Treasury refunding cycle can make certain delivery months of Treasury bond futures more in demand than other delivery months.

Normal Market

Futures prices are considered to be "normally" arrayed when each succeeding delivery month is higher priced than the preceding delivery month. A normal futures market in wheat, for example, might look something like this on any given day:

Wheat Futures Contract	*Price (per Bushel)*
September	$3.25
December	3.35
March	3.42
May	3.42
July	3.24

Futures prices are considered to be "normally" arrayed when each succeeding delivery month is higher priced than the preceding delivery month.

December wheat is higher priced than the September, the March higher priced than the December, and so on until anticipation of the coming harvest pushes July wheat below all the other delivery months.

The difference between the price of September wheat and December wheat is 10 cents. That difference represents the cost of carrying the actual wheat for that 2-month period. It includes, among other things, the cost of warehouse space and the cost of insurance against loss from dampness or rodents.

If the price difference between the 2 delivery months were to become much greater than the actual carrying charge, arbitrageurs in the trade would see a sure profit. They would buy the (lower-priced) nearby future and sell the (higher-priced) distant future. When the nearby future matured, they would take delivery. They would store the grain and deliver it against the most distant futures contract when it matured. In effect, the futures market would pay them more for storing the wheat than it actually cost them to do so. Their actions would put upward pressure on the nearby futures price and downward pressure on the more distant futures price, driving the two prices back into line.

Arbitrage brings cash and futures prices together in or near the futures delivery period.

This phenomenon requires that the commodity concerned be storable because storage is necessary to make the strategy work. It also requires that there be a good supply of the commodity on hand.

Inverted Market

When an agricultural commodity suffers from short supply, people do what they have done for centuries: They hoard it. This causes the cash price of the commodity to rise. Nearby futures prices are also affected, for reasons we have already seen, and an "inverted" futures market develops, where succeeding delivery months are lower in price.

An inverted market in soybean meal, for example, might look like this:

Futures Contract	*Price (per Ton)*
July	$201.20
August	196.50
September	192.70
October	190.70
December	188.20
January	186.00

August meal is lower than July, September is lower than August, and so on. There is virtually no limit as to how far the cash and nearby futures price can go above the price of the more distant futures contract. The arbitrage possible in a normal market doesn't work in an inverted market; to buy the (higher-priced) cash commodity and deliver it against a (lower-priced) distant futures contract would lock in a loss, not a profit.

If futures prices become successively lower as they go out in time, the market is said to be "inverted."

The situation is different in the financial futures. No warehouse is needed to store a Treasury security or a foreign currency bank balance. The carrying charge for these cash assets is figured in a different way, and the price relationship between delivery months depends on different factors. We will talk more about this subject later, when we take a closer look at the financial futures.

SUGGESTED READING

Futures and Options Course. Futures Industry Association, Washington, DC, 1995.

The Speculator

Commodity speculators get blamed for many of the economic ills that befall humanity. Speculators cause runaway high prices and prices so low that agricultural producers cannot survive. Gluts are their doing, as are shortages. They are accused of manipulating markets, fixing prices, and disrupting normal supply channels, all for their own nefarious ends.

Most of these accusations arise from a lack of understanding. Futures markets are complicated mechanisms, and how they work is not common knowledge.

A futures market without speculators would be like a country auction without bidders—and would work just about as well. In most markets, speculators are many times more numerous than any other participants. It is the speculators who create a liquid market. Their activities cause prices to change often, and by small increments, enabling relatively large orders to be filled without sending prices sharply higher or lower.

When a speculator buys or sells a futures contract, he is voluntarily exposing himself to the risk of price change. The speculator accepts the risk because he expects to profit from the price change.

Here's an example of a successful speculative trade:

			Margin
May 15	Bought 1 contract December copper at	105.25	
			$1,500
June 21	Sold 1 contract December copper at	111.70	
		+6.45	

The speculator made a profit of 6.45 cents per pound, or (6.45 × $250) = $1612.50, less commissions. That's a gain of 107 percent on his original margin of $1500, and it was earned in about 5 weeks. However, losses can accrue equally fast:

			Margin
May 15	Bought 1 contract December copper at	105.25	
			$1,500
June 21	Sold 1 contract December copper at	99.25	
		-6.00	

The decline of 6 cents caused the loss of $1500, or 100 percent of the original margin.

When a speculator buys or sells a futures contract, he is voluntarily exposing himself to the risk of price change. The speculator accepts the risk because he expects to profit from the price change.

Most speculators have no truck with the actual commodity. In fact, inadvertent delivery of the commodity against a long futures position—which, despite the stories you may have heard, rarely happens—would be a financial gaffe for most speculators. This would be particularly true in the agricultural markets. You can imagine someone who wouldn't know soybeans if he saw them being told by his broker that he is now the proud owner of 10,000 bushels in a grain elevator in Illinois.

Speculators are drawn to the futures markets by the opportunity for profit and by the game itself. It is not unusual for $20,000 equity in a futures trading account to become $50,000—or $5000—within a few months. The game is not difficult to play. An account can be opened in a few minutes; after that, your telephone or computer connects you indi-

rectly with every futures exchange in the world. It's certainly not dull. As a speculator, you are pitting your judgment and trading skill against some of the best financial minds in the world.

Speculators come from every walk of life. They may be private individuals, informal groups like commodity trading clubs, or corporate members of the trade. Their goals are the same: to earn trading profits from futures positions by being long when prices are rising and short when prices are falling.

In a simple spread, the prices of the two futures contracts tend to go up and down together. Gains on one side of the spread are therefore offset by losses on the other.

Speculators also use *spread* positions. A simple spread involves two positions, one long and one short. They are taken in the same or economically related commodities. Prices of the two futures contracts therefore tend to go up and down together, and gains on one side of the spread are offset by losses on the other. The spreader's goal is to profit from a change in the *difference* between the two futures prices. He is virtually unconcerned whether the entire price structure moves up or down, just so long as the futures contract he bought goes up more (or down less) than the futures contract he sold.

The spreader's goal is to profit from a change in the *difference* between the two futures prices.

One of the most popular spreads involves the end of the crop year in wheat. As we mentioned earlier, May wheat is the last futures contract before the harvest, and July wheat is the first futures contract after the harvest. Prospects for a good harvest will therefore weigh more heavily on July wheat than on May wheat.

A spreader who expected a bumper crop would buy the potentially stronger contract (May) and sell the potentially weaker contract (July). Some tie later he would "unwind" the spread (close out both positions) by selling the May and buying back the July.

The following example will help you understand how the spread works:

May Wheat			*July Wheat*	
Buy at	$3.85 per bushel	February	Sell at	$3.80 per bushel
Sell at	4.20 per bushel	April	Buy at	3.90 per bushel
Gain	+$ .35		Loss	–$ .10

Net result +$.25

The spread was put on in February and taken off in April. During that time, the effect of the coming harvest held the price of July wheat down, while May wheat registered a fair gain. The end result was a profit for the spreader because the futures contract he bought went up more than the futures contract he sold.

Prices don't have to go up for the spread to earn profits. Suppose that right after the spread was established, Brazil and Canada announced unexpectedly large wheat crops:

May Wheat			*July Wheat*	
Buy at	$3.85 per bushel	February	Sell at	$3.80 per bushel
Sell at	3.35 per bushel	April	Buy at	3.10 per bushel
Loss	–$ .50		Gain	+$ .70

Net result +$.20

Both futures prices went down in expectation of the flood of wheat. The long side accrued losses; the short side earned profits. But the short position lost more ground than the long position, so the spread still generated gains.

A spread incurs market losses when it moves in a direction opposite to that which the spreader anticipated:

May Wheat			*July Wheat*	
Buy at	$3.85 per bushel	February	Sell at	$3.80 per bushel
Sell at	4.20 per bushel	April	Buy at	4.25 per bushel
Gain	+$ .35		Loss	–$ .45

Net result –$.10

Although both prices advanced, the long position went up less than the short position. This resulted in a net loss.

Examples of other spreads would include:

Long wheat/short corn
Long hogs/short pork bellies
Long gold/short silver
Long cattle/short hogs
Long deutsche mark/short Swiss franc

In each case, the prices of the two commodities tend to go up and down together, and that's a basic requirement for a spread. Long silver/short coffee and long cattle/short cotton are examples of multiple positions that do not qualify as spreads because the two commodities are not economically related. The two prices move independently.

Because a loss on one side tends to be offset by a gain on the other, the market risk in a spread is categorically less than the risk in a net short or long position. This fact, coupled with relatively low margin requirements, makes the spread an attractive trading vehicle to smaller traders. However, it is still possible, by taking on too many contracts, to establish a total spread position with overall market risk just as high as that of a single net long or short position.

How well do speculators do? That depends on to whom you talk. The conventional wisdom is that some 95 percent of private individual speculators lose. A more reliable indication may be found in a study done by Thomas A. Hieronymus, an agricultural economist at the University of Illinois. He analyzed 462 speculative trading accounts of a major brokerage firm over a period of 1 year (1969). The accounts traded the full gamut of commodities at the time. Over the year, 164 accounts showed profits, and 298 accounts showed losses; or, nearly twice as many people lost money as made money.

On the assumption that one trade does not a speculator make, Hieronymus then divided the accounts into two groups: those who entered the market, made one or two trades, and went away; and those who stayed to play the game. The latter group he called *regular* traders; a regular trader was defined as one who made at least 10 trades or who had made or lost $500.

Here the results were different. Forty-one percent of the regular traders made money during the year. Most won or lost $3000 or less, although a few made or lost substantial sums. For the group, net (after commission) profits were about the same as net losses.

Among the one-time traders, some 92 percent lost money.

His conclusion from the 1-year sample: the game is played and won by some people; but, for the most part, the regular players take money from the nonregular players and give it to the commission house to pay for the cost of playing.

Granted, the evaluation was made more than 20 years ago, and there have been many new futures markets added since then. But human nature has not changed.

The "average" speculator is male, 45 years old, a professional, has more than 4 years of college, and a median annual income above $75,000.

What does the "average" speculator look like? Some data have been gathered on that, too. He is male, 45 years old, a professional, has more than 4 years of college, and a median annual income above $75,000. He tends to be a small trader (only one or two contracts at a time) and holds a futures position for less than 1 month.

SUGGESTED READING

The Commodity Futures Game: Who Wins? Who Loses? Why? R. J. Teweles, C. V. Harlow, and H. L. Stone. McGraw-Hill, New York, Rev. 1987.

Tiger on Spreads, Phillip E. Tiger. Wiley, New York, 1997.

The Hedger

You've heard the phrase "hedging your bet." If you put $100 on the Los Angeles Lakers to win tomorrow night and later find out that two of their starters have the flu, you could hedge your bet by putting $100 on their opponents.

A hedge in the futures markets operates on the same general principle. A hedge is a futures position that is roughly equal and opposite to the position the hedger has in the cash market. A better definition may be that of Holbrook Working, a Stanford University economist. He defines a hedge as a futures transaction that acts as a substitute for a later cash transaction.

A hedge is a futures position that is roughly equal and opposite to the position the hedger has in the cash market. It is also defined as a futures transaction that acts as a substitute for a later cash transaction.

What makes a hedge work is the fact that cash and futures prices for the same commodity tend to go up and down together, so the losses on one side are canceled out by gains on the other. If you are long (own) the cash commodity, your hedge would be a short futures position. If prices decline, the money you lose on the cash commodity would be offset by the profits in your short position.

SHORT HEDGE

Assume you are a dealer in Treasury bonds. You buy them and sell them at a markup. Between the time you buy the bonds and the time you find a customer, the bonds are, in effect, sitting on your shelf. If bond prices go down while you are holding them, you would have a loss on your inventory.

You do not want to assume the risk that the bonds will lose value while you hold them. You know that a short position in Treasury bond futures would accrue gains if prices decline, offsetting the loss. So as soon as you buy the cash Treasury bonds, you sell Treasury bond futures short as a hedge.

Let's assume that bond prices did indeed fall before you found a customer for your bonds. The outcome would look something like this:

Short Hedge in T-Bond Futures

Cash Market			*Futures Market*	
Buy cash bonds at	105-07	Now	Sell T-bond futures at	105-17
Sell cash bonds at	104-18	Later	Buy T-bond futures at	104-28
Loss	0-21		Gain	0-21

Net gain or loss = 0

This example is oversimplified, but it demonstrates the point. If the bond dealer had not hedged his inventory, he would have lost $^{21}/_{32}$ ($6.56) on each $1000 worth of bonds. The gain of $^{21}/_{32}$ on the futures position fully offset the decline in the market value of the cash bonds while he held them.

Short hedgers comprise those who grow, store, process, or distribute a cash commodity and who would be hurt by a decline in the cash price.

Another example: It is fall, and a farmer plans to plant his winter wheat soon. It will be harvested next May. The price for cash wheat now is $3.85 per bushel. He'd like to be able to lock in that price for his wheat next May. With futures, he can:

Short Hedge in Wheat Futures

Cash Market			*Futures Market*	
Wheat price	$3.85	Fall	Sell wheat futures at	$3.90
Sell wheat at	3.44	Next May	Buy wheat futures at	3.49
Opportunity loss	$ .41/bushel		Gain	$ .41/bushel

Net gain or loss = 0

In May, the farmer received $3.44/bushel for his actual wheat plus a 41-cent gain in his futures hedge. The sum of $3.44 and $.41 is $3.85, which is the cash price he wanted. If it were not possible to hedge, or if for some reason he had chosen not to hedge, the farmer would have gotten only $3.44/bushel as the fruits of his labors.

In this case, the loss on the cash side is referred to as an "opportunity loss," which means that it's not actually money removed from the farmer's pocket, but what he might have earned under other circumstances (e.g., if he had had the cash grain in the fall and sold it then).

There's something else different about this particular example. Notice that the farmer put the hedge on (took the short futures position) even before he planted the wheat. An anticipated position in the cash commodity can be hedged just as effectively as an existing position.

Short hedgers comprise those who grow, store, process, or distribute a cash commodity. A U.S. oil importer with a tanker of crude on the high seas would use a short hedge to protect his cargo from a price decline. General Mills would use a short hedge for the wheat stored in its warehouses. The common denominator is risk of loss due to a decline in the cash price.

For the short hedge to be effective, the hedger has to be dealing with the basic commodity, or something very close to it. A manufacturer of cotton shirts, for example, would probably find hedging in cotton futures of limited value because there are so many other, more important costs in the making of a shirt.

LONG HEDGE

It is also possible to use a long hedge in futures. To help you understand it, bear in mind Holbrook Working's definition: a futures transaction that substitutes for a later cash transaction.

A long hedge would be taken by someone who has promised to deliver the cash commodity later and is concerned that cash prices will go up in the interim.

Let's assume you are an exporter of grains. You have sold 1 million bushels of corn to China for delivery 3 months from now. The agreed price is today's cash price in Chicago—$2.85 per bushel. You could buy the cash corn today, store it for 3 months, and then deliver it. But you have no warehouse. Instead you buy corn futures:

Long Hedge in Corn Futures

Cash Market		*Futures Market*
Cash corn at $2.85/bushel	Now	Buy corn futures at $2.96/bushel
Buy cash corn at $3.10/bushel	3 Months Later	Sell corn futures at $3.21/bushel
Opportunity Loss $.25/bushel		Gain $.25/bushel

Net gain or loss = 0

You paid $3.10 per bushel for the cash corn to ship to China; however, the gain of $.25 in your long futures position lowered your effective cost to only $2.85 per bushel, which is the price on which you planned.

These examples do not reflect brokerage commissions or certain other costs such as storage and insurance. These costs are intentionally omitted to keep things simple. Also, you may have observed that each

hedge we described worked perfectly, which is seldom true in actual practice. We'll take a closer look at these important financial transactions in a later chapter.

SUGGESTED READING

The Complete Guide to the Futures Markets, Jack Schwager. Wiley, New York, 1984.

The Green Stuff

We mentioned earlier that the margin for a futures position is not a down payment, as in stocks. A futures position confers no rights of ownership to the underlying asset. The owner of a futures position does not gain any income or benefits from the asset. A futures contract is really just a pair of promises: one to deliver the underlying commodity and another to receive and pay for it.

Futures margin is a good-faith deposit. The balance of the value of the futures contract is not borrowed, so no loan interest is paid by the holder of a margined futures position.

The purpose of futures margin is to ensure contract performance and to protect the financial integrity of the marketplace. Margin is required of both the buyer and the seller of a futures contract. Each futures contract has its own minimum margin levels, set by the exchange where the contract is traded. The margin put up when a futures position is first opened is called *original* margin. Depending on the requirements of the particular exchange, original margin may comprise cash, a transfer of funds from another one of the customer's accounts, U.S. government securities, a letter of credit, or a negotiable warehouse receipt.

The purpose of futures margin is to ensure contract performance and to protect the financial integrity of the marketplace.

If a futures position generates unrealized losses as a result of adverse price movement, additional margin may be called for. This is referred to as *maintenance* margin. Its purpose is to restore the financial protection that margin provides, so the amount of maintenance margin required is that needed to build the margin back up to the original level. The requirements for maintenance margin are more stringent, requiring either (1) deposit of the necessary cash or (2) a reduction in the number of futures positions held.

Futures margin is a good-faith deposit. The balance of the value of the futures contract is not borrowed, so no loan interest is paid by the holder of a margined futures position.

In addition to prescribing minimum margin levels, the exchange sets the levels at which maintenance margin will be called for. This varies from exchange to exchange, but the 75 percent level is a common benchmark; that is, if the margin level drops below 75 percent of its original value, a margin call would be triggered.

Delivering margin calls to market participants and following up to see that they are met is the responsibility of the futures broker (technically, an *associated person*). If you receive a margin call and for some reason do not meet it within a suitable period of time, the brokerage firm is empowered to raise the necessary cash by (1) closing out the position that created the margin call, (2) closing out any other futures position you might have, or (3) transferring funds from another of your accounts that the firm holds—your stock account, for example—into your futures account to cover the shortfall. This authority is given to them by you in the forms you sign when you open your futures account.

CAPITAL LEVERAGE

Futures prices have a generally underserved reputation of wild volatility. There are common stock issues that fluctuate more in price than many commodities. The apparent volatility of futures prices is derived; it is the result of extremely low minimum margin requirements.

Most futures margins range from a fraction of a percent to 10 percent of the value of the underlying futures contract. A small change in the value of the commodity therefore causes a big change in the equity in the futures account.

Example

Cash cotton and cotton futures are both 80 cents a pound. You are long one contract of cotton futures. Your original margin is $2000. The contract size for cotton is 50,000 pounds, so the total value of the cotton itself is 50,000 pounds × 80 cents = $40,000.

Cash and futures price of cotton both advance 1 cent, from 80.00 to 81.00 cents a pound. The value of the cash cotton has thus gone up $500 ($.01 × 50,000 pounds), or from $40,000 to $40,500; that's an increase of 1¼ percent. The value of your equity in the futures contract has also gone up $500; but that's from $2000 to $2500, a jump of 25 percent.

This effect is called *capital leverage,* and it is a two-edged sword. If cotton prices were to fall, your losses would be magnified on the same scale. If cotton prices fell 3 cents per pound, for example, three-fourths of your original margin would be wiped out:

	Old Price	*New Price*	*Percentage Change in Price*	*Change in Value*	*Equity*	*Percentage Change in Equity*
Cash cotton	80.00	77.00	-3.75%	-$1500	$40,000	- 3.75%
Futures contract	80.00	77.00	-3.75%	-$1500	$ 2,000	-75.00%

MARGIN

The setting of margin levels is a chain reaction that begins with the exchange. The exchange sets the *minimum* amounts required to support a futures position. Next in the chain is the clearinghouse. It is responsible for the financial integrity of the market and may ask more margin from its clearing members than the exchange minimums. The final link in the chain is the brokerage firm (technically, a *futures commission merchant,* or *FCM*). If the FCM considers it necessary, it may ask more margin from its public customers than the exchange minimum requirements.

The flow of actual margin money is the reverse. The public customer writes a check to cover his margin requirement and gives it to his FCM, who holds the funds in the customer's name in a segregated account. The FCM posts margin with the clearinghouse for the FCM's open positions. In most exchanges, the FCM's countervailing long and short positions are offset, and only the net exposure is margined. The balance of the customers' funds are retained by the FCM.

Original and maintenance margins may be changed at any time by the appropriate exchange. In the past, exchanges have used changes in margin levels as an effective means to control price volatility. When a futures market becomes overheated, margin levels are raised significantly. Fewer futures positions can then be supported with any given amount of capital, and trading slows. Margin requirements may also be routinely increased during the "spot month," or the period of time when delivery of the actual commodity can be made against the futures contract.

On most exchanges, changes in margin levels are retroactive. That is, the changes apply immediately to both old and new futures positions. If margins are raised and the new maintenance level is above the old maintenance level, the change could trigger margin calls in existing positions. If margins are lowered, capital committed to existing positions would be freed and the owner of the futures accounts could withdraw the excess funds in cash or use them to margin additional futures positions.

Only funds in excess of the original margin level are free and available for withdrawal or other use. That increment of margin between the original level and maintenance level is part of the original margin and must be on deposit as long as the futures position is held.

For example, suppose you buy one contract of gold futures at 383.00. Your original margin is $2700; the margin maintenance level is $2100. The transaction plays out as follows:

End of Day	*Gold Futures Price*	*Equity in Account*	*Remarks*
1	383.00	$2700	Opening transaction.
2	379.00	2300	Equity has been eroded, but margin is still above the maintenance level.
3	374.50	1850	Margin below $2100 maintenance level. Margin call would be issued for $850, to build margin back up to original level of $2700.
4		2700	$850 margin called deposited in A.M.
4	384.10	3660	$960 ($3660 – $2700) is now available for withdrawal in cash or to use to margin other futures positions.
5	393.90	4640	$1940 ($4640 – $2700) is now available for withdrawal in cash or to use to margin other futures positions.
6		3640	You withdraw $1000 in cash in A.M.
6	390.70	3320	No change in status.
7	384.20	2670	Margin is below original level but still above $2100 maintenance level; no action required.
8	385.70	2820	You close out the position at end of trading day.

Your accounting in the preceding transaction works in this way: You paid an original margin of $2700 and maintenance margin of $850. That totals $3550. You withdrew $1000 on Day 6 and had an equity of $2820 after the closing transaction. That totals $3820. You therefore received $270 ($3820 – $3550) for your efforts.

Only funds in excess of the original margin level are free and available for withdrawal or other use.

A shorter route to the same answer is simply to compare the opening and closing gold futures prices. The closing price of 385.70 minus the opening price of 383.00 equals $2.70 per ounce. For 100 ounces, that's $270.

When setting minimum margin levels, the exchange also countenances the kind of futures position involved. Speculative short or long positions present the highest risks and so have the highest margins. At the other end of the spectrum are hedges, which generally have the lowest margins. The reason is that hedgers hold offsetting cash and futures positions in the same (or similar) commodity, making the overall economic effect similar to a spread.

DAILY MARK TO MARKET

The clearinghouse member deposits original margin with the clearinghouse when the opening transaction is cleared. Outstanding futures contracts are marked to the market by the clearinghouse at the end of each trading day. That is, gains are credited and losses are debited on all open positions. The settlement price is used as the benchmark for these calculations.

If a clearinghouse member's account has a credit balance as a result of the daily marking to market of his positions, he may withdraw that amount of cash overnight. If the clearing member owes money, it must be deposited before the opening of trading the next business day. This is called *variation* margin.

In most clearinghouses, a clearing member's margin requirements are based on his net holdings, after his offsetting long and short positions have been canceled out. The two exceptions are the Chicago Mercantile Exchange and the New York Mercantile Exchange, which require that clearing members margin their long and short positions separately, without netting out offsetting positions.

Exchanges are also empowered, during times of emergency, to call for variation margin during the trading day. This is generally due in the clearinghouse within 1 hour. On October 19, 1987, the day the Dow Jones Industrial Stock Average fell more than 500 points, the Chicago Mercantile Exchange made two such extraordinary calls for variation margin for long positions in S&P 500 Stock Index futures.

COMMISSIONS

The FCM performs a variety of services for its public customers. These services include safekeeping their funds; apprising them of current market conditions; taking their orders and reporting back the fill prices; issuing periodic written statements of trading activity, profit and loss, and account balances; and publishing market research reports. For providing these services, the FCM charges a commission on each trade its customer makes. This commission is for a "round trip." It is paid only once, when the position is closed.

Futures commissions are not uniform. They vary from commodity to commodity, with the type of futures position, and from one FCM to another. By law, commissions on futures trades on U.S. exchanges are negotiable between FCM and customer. As a practical matter, only the biggest customers have enough clout to negotiate. FCMs publish "recommended" commission schedules for the guidance of their brokers, and most customers pay these amounts without question.

The lowest commission is for a position that is opened and closed during the same trading session because it does not have to be taken up fully into the FCM's accounting system. Also at the low end of the scale are commissions on spreads, which are less than the commissions would be on the two positions if they did not comprise a spread. Commissions are highest on net long or short positions that are held overnight.

The greatest difference in commissions is between FCMs. A major brokerage firm might charge $200 for a trade that a discount broker would handle for $25. The crux is in the amount of support you receive. At the major firm, you would have your own personal broker to help you with your trading decisions. The firm would provide you with printed research reports from time to time, pointing out potentially profitable situations. The firm would likely conduct business in all kinds of markets, so your money could be moved easily from equities to bonds to futures to a money market account.

In most markets there is a limit on how far prices can move in one day. The daily limit is measured from the previous day's settlement price and applies in both directions.

There are several large discount futures brokerage operations in the United States. Some of them specialize in futures only. Many have no research departments and acknowledge that they are for the person who makes his own trading decisions. Others have become more competitive, providing personal brokers for their clients and written market research reports.

The daily price limit is set for each commodity by the exchange on which the commodity is traded.

PRICE LIMITS

From time to time, unexpected news galvanizes a futures market, sending prices up or down sharply. In most markets, there is a limit on how far prices can move in one day. The purpose of these daily price limits is to force a "cooling-off" period, to allow market participants time to reevaluate the news and its impact on their holdings.

The daily limit is measured from the previous day's settlement price and applies in both directions. It is different for each commodity. For soybeans, for example, the normal daily price limit is 30 cents. If beans close at 6.50 today, their maximum trading range tomorrow would be 6.20 to 6.80. If they closed at 6.48 tomorrow, their maximum trading range the next day would be 6.18 to 6.78.

When the price reaches a limit during a trading day, market activity tends to slow, and may even stop, because of the same economic forces that caused the price move. If prices have hit limit up, for example, it means there are many buyers and few sellers. If there are no sellers at the limit price, trading could literally cease in that market. However, no one goes home. Transactions may still take place at or within the limit. It is even possible that later news or a reevaluation could bring sellers suddenly back into the market, prices could back away from the limit, and active trading could resume.

The daily price limit is set for each commodity by the exchange on which the commodity is traded. Exchanges also have standing rules to deal with exceptionally strong or weak markets. Limits are, after all, artificial constraints. Despite their benefits, they block the free operation of economic forces in the marketplace. In an effort to mitigate the adverse

economic effects of limits, exchange rules allow for automatic expansion of price limits when prices have closed at the limit on consecutive days. There are also standing rules for returning the daily price limit to its normal value when the market has quieted down again.

SUGGESTED READING

The Complete Guide to the Futures Markets, Jack Schwager. Wiley, New York, 1984.

Chapter 7

What Happens After You Hang Up the Phone

The futures order process used to involve paper and telephones. Today, the main conduit is the computer. The computer terminal on your local broker's desk provides him with instant quotes and other information. Chances are that your broker can also use it to talk directly with the trading floor of the exchange.

When your order to buy or sell reaches the floor, it is delivered—by runner or hand signals—to the floor broker who represents your brokerage firm. The broker enters the pit and executes your order, notes the price, and the communication process is reversed. At the last step, your local broker advises you of the outcome.

The entire process takes place in a very short time. In some cases, the trade may be confirmed while you are still on the phone.

ORDERS

A futures order consists of five elements:

1. Whether to buy or to sell.
2. The quantity.

3. The delivery month.
4. The commodity, including the exchange if the commodity is traded on more than one exchange.
5. Any special instructions, such as a time or price limit.

The first element—whether to buy or to sell—is not as self-evident as it might seem. You and your local broker are aware of whether your order is for an opening or closing transaction. It's not an issue after that. The floor broker who executes your order doesn't know or care. To the clearinghouse, your trade is just another purchase or sale to be processed.

Except in a few instances, it is not legal to be both long and short the same futures contract in the same account. When you buy a December T-bond, for example, your broker's computer checks your account to see if you are already short a December T-bond. If you are, the trade is treated as a closing transaction. If you are not presently short the December T-bond, your trade is logged in as an opening transaction.

The rule against being both long and short the same futures contract is quite specific. Chicago wheat and Kansas City wheat are not considered the same; nor are New York silver and Chicago silver, even though the underlying commodities are the same: refined silver of not less than .999 fineness.

The exceptions to the general rule are day trades, where you open and close the transaction within the same trading session; a futures position taken to meet the exercise of a futures option you have sold short; a bona fide hedge; the sale of futures during the delivery period for the purpose of making delivery; and, in certain circumstances where different independent money managers control separate accounts for the same investor.

Your order must also specify the number of futures contracts you want to buy or sell. Here again there is more than meets the eye. Most futures contracts are sold as contracts; that is, you would buy or sell one June cattle or three March T-bills or two December copper. The grains and soybeans are exceptions. They are ordered by number of bushels, with the three zeros omitted. The futures contract size for wheat, for example, is 5000 bushels. In a futures market order it would be referred to as "5," as in "Sell 5 December wheat." Contract sizes for corn, soybeans, and oats are also 5000 bushels, and their orders are expressed in the same way.

The delivery month must be included in your order because, as we will see later, different delivery months of the same commodity may vary considerably in liquidity and price behavior. The year should also be specified in the order if there is any possibility of confusion between a nearby contract and the same delivery month a year away. Likewise, it may be necessary to indicate the exchange on which the commodity is traded.

A market order authorizes the floor broker to take the best price he is offered, without qualifications. In a thinly traded market, that price could be several cents away from the previous price.

Futures market orders differ most in the possible contingencies they may contain. We will discuss these in the context of actual representative orders.

A limit order to buy may be filled only at or *below* the limit price.

MARKET ORDERS

The simplest order is called a *market order*. It would take the form of:

"Buy one June cattle at the market."

This order would be filled by the floor broker at the best price obtainable at that moment he receives it. The price you paid for your June cattle will not be known to you until the actual fill is reported back to you.

The market order is executed without delay and is used in situations where that is desirable. For example, suppose that you had been short June cattle for 3 weeks, had a trading profit, and felt that the market was about to rally sharply. You would not be interested in finesse but would want to be out as soon as possible. You would use a market order in this instance.

The price you get on a market order depends largely on the liquidity of that particular futures contract. Futures markets are very efficient. The spread between the bid price and the asked priced in an active futures trading pit may be as little as one-tenth of 1 percent. By comparison, the bid/asked spread for most common stocks is about one-half of 1 percent; in real estate, it is not unusual for a buyer to bid 15 to 20 percent below the original asking price.

Care must be taken, however, in futures markets where there is little trading activity. A market order authorizes the floor broker to take the best price he is offered, without qualifications. In a thinly traded market, that price could be several cents away from the previous price. You have no recourse if the price you receive on a market order is an unpleasant surprise.

A limit order to sell may be filled only at or *above* the limit price.

CONTINGENT ORDERS

All other futures market orders are contingent orders; that is, they contain some condition that must be satisfied before the order can be executed. The most commonly used is the *limit order*. It would take the form of:

"Buy one June T-bond at 103-20."

This is called a limit order because you have placed a limit on the price you will pay. It resolves the biggest problem with the market order, that of price vulnerability. The floor broker can fill your buy order at less than 103-20 but not at more than that price. The words *or better* are sometimes added to the limit order, but they are unnecessary. If the market is trading below 103-20 when your order reaches the floor, the floor broker will get you the best price he can. With a limit order, however, you have no assurance of execution. If the limit price is never reached, your order will never be filled.

Orders that are placed at prices well away from the current market are defined broadly as resting orders. There are two kinds: *stop orders* and *market-if-touched* (MIT) orders.

An MIT order is used to enter or leave a market at a price somewhat more favorable than the present price. An MIT buy order is therefore placed below the current price, and an MIT sell order is placed above the current price. To take an example, suppose December T-bill futures were trading at 94.50. You want to take a new long position in that futures contract and want to pay about 93.90. You would tell your broker:

"Buy one December T-bill at 93.90 MIT."

Orders that are placed at prices well away from the current market are defined broadly as resting orders. There are two kinds: *stop orders* and *market-if-touched* (MIT) orders.

When this order reaches the trading floor, the floor broker puts it in his deck of resting orders, which are organized by price. If December T-bills later trade at 93.90, your order would become a market order at that instant and would be treated by the floor broker like any other market order.

At what price would you buy your December T-bill future? It depends. Remember that an MIT order becomes a market order when the specified price is hit, and market orders are filled at the best price obtainable at that moment. If the market rallied after touching 93.90, you could legitimately pay 94.00 or even more for your December T-bill.

MIT orders are used when there is no particular urgency in entering or leaving a market. As with all orders that specify price, however, there is the chance that the MIT order will not be filled. In the specific example just given, if December T-bills never traded at 93.90 but instead rallied to 95.00 and beyond, the resting MIT buy order would remain unexecuted. Some experienced traders, who have developed a knack for forecasting daily price trading ranges, are willing to risk the chance of not getting filled to try for the possible price advantage.

Stop orders may also be used to enter or leave a market, but they perform a different function from MIT orders. The simplest way to avoid confusion between the two is to remember that the most common use of stop orders is to curtail losses. If you are long, falling prices generate losses; any resting sell order intended to curtail those losses must therefore be *below*

current price levels. Conversely, any buy order to curtail losses in an existing short futures position must rest *above* current price levels.

Let's take a specific example. Suppose you have held a long position in December S&P 500 Index futures for a month. You bought it at 545.70, and it is now trading at 574.10. You have a good gain, but you feel prices may not go much higher; you decide that if the market falls below 572.50, you will get out. The order you would give your broker is:

"Sell one December S&P 500 at 572.45 stop."

The December S&P 500 is trading at 574.10 when you place this order. If prices continue to advance, the stop price will never be touched, and your order will not be executed. However, if you were correct in your assessment of the market and prices start to slip, your stop order automatically converts to a market order when the stop price of 572.45 is reached, and your long position will be closed out.

To understand the significance of the word *stop* in the order, look at what happens if you take it out:

"Sell one December S&P 500 at 572.45."

If this order were entered when December S&P 500 futures were trading at 574.10, it could legally be executed immediately, as the price limit is long since passed. As a practical matter, a floor broker who received such an order would most likely suspect a mistake and query the brokerage firm before he acted on it.

As with the MIT order, there is no guarantee of receiving the stop price when the order is filled. The stop order becomes a market order when the stop price is hit; if prices are moving quickly at that time, the price you receive could be several "ticks" away from the stop price.

The *stop limit* order combines the qualities of both the stop order and the limit order. It would take the form of:

"Buy one September deutsche mark at .6158 stop, limit .6175."

Nothing would be done on this order until the stop price is reached. At that point, however, it becomes not a market order but a limit order. The floor broker can legally fill it only at a price of .6175 or lower. If prices were to jump above .6175 immediately after the stop price was hit, the order could remain unexecuted.

The purpose of the stop limit order is, of course, to preclude the possibility of getting an unfavorable price. The stop limit order is not widely used. It is employed mainly in thinly traded markets or those that, even though liquid, are quite volatile.

Many practitioners feel that the closing prices at the end of the trading day are the best consensus of the market. After all, these are the prices that buyers and sellers are willing to take home for the night. There is a futures market order designed to obtain the closing price. It take the form of:

"Sell one March Eurodollar MOC."

MOC stands for "market on close." This order would be held by the floor broker until a minute or two before the closing bell, at which time he will treat it as a market order. The price you receive will not necessarily be the exact closing or settlement price, but it will be somewhere in closing range, which is loosely defined at the last 60 seconds of trading.

Orders may also be executed at the opening of the market. The letters *MOO* would be added to the order; they stand for "market on opening." MOO orders can be utilized to take advantage of the overnight buildup of market orders. For example, if a short-term trader suspected that there was a bulge of overnight orders to buy and that once these orders were assimilated the market would settle back, he might sell short on the opening in the hope of buying his contracts back at a lower price later in the day. MOO orders are not as widely used as MOC orders.

Any order that does not mention time is considered a day order. That is, it will expire at the end of the trading session during which it was entered. GTC stands for *good 'til canceled* and may be added to any resting order. Most brokers prefer to use day orders, reentering the order each morning if necessary. There isn't a broker who has been in the business more than a few years who hasn't returned from vacation or a business trip to learn that a forgotten GTC order was triggered in his absence. The resulting position is rarely a gain.

We talked about commodity spreads in Chapter 4. A spread involves a long position in one commodity and an offsetting short position in the same or economically related commodity. There is a special order that can be used to establish these dual positions. Because a spread trader is interested only in the price difference between the two sides of the spread, he loses nothing by placing his order in that context. For example:

"Spread buy 5 Chicago May wheat/sell 5 Chicago July wheat,
May 5 cent premium."

Any order that does not mention time is considered a day order.

An order entered in this fashion gives the floor broker latitude. He can elect to execute each side separately, taking whatever prices are available; or he can deal directly with a floor trader who specializes in spreads. If the same order were entered as two separate transactions—for example, buy 5 Chicago May wheat at 3.95 and sell 5 July wheat at 3.90—your floor broker would be handcuffed. He has two orders, with two different limits, and somehow has to execute them both at the proper time.

There are other possible orders that can be used in the futures markets. They are known more for their exotic qualities than their value in obtaining a desired price or time of execution. The exchanges publish lists of orders that they will accept. Generally, no contingent orders are accepted on the last day of trading in a futures contract because trading activity may be too hectic to allow their orderly handling.

SUGGESTED READING

Futures and Options Course. Futures Industry Association, Washington, DC, 1995.

The Arena

There are three major organizations involved in futures trading: the exchange, the clearinghouse, and the futures commission merchant (FCM).

THE EXCHANGE

There are a dozen or so major future exchanges in the United States. Most are private, nonprofit organizations owned by their members. The oldest futures exchange in the United States is the Chicago Board of Trade, founded in 1848. The newest is the New York Futures Exchange, which first opened its doors in 1978.

The exchange provides the arena where buyers and sellers of futures contracts meet to conduct business. The trading floor, where the actual buying and selling takes place, is divided into several large circular trading "rings" or "pits." Each pit is designated as the trading site for one or more commodities, depending on the level of activity. If a commodity trades only a few hundred contracts a day, it may share a pit with another relatively inactive market. If a commodity has a large following, the entire pit will be devoted to it.

Trading is done by open outcry. That is, orders to buy or to sell are shouted out for anyone who might be interested in doing business. Hand signals are also used because it is sometimes difficult to hear above the din.

Each completed trade is recorded by the individual traders on cards they carry for that purpose. These cards are later turned in to the clearinghouse, where the trades are matched and recorded. Each transaction in the pit is also noted by an observing price reporter, who transmits the information to an electronic display on the exchange floor and to price reporting services that flash the data around the world.

Only exchange members may buy and sell futures contracts on the trading floor. Persons in the pits break down into two broad categories: *floor brokers* and *floor traders*. Floor brokers are agents; they transact trades for third parties, for which they receive a small commission. Virtually all floor brokers are affiliated with one or more FCMs.

A floor trader uses his exchange membership primarily to buy and sell futures contracts for his own account. His advantages over off-floor trading include immediate access to new market information and very small commission costs. Historically, members have been able to act alternately as a floor broker and floor trader at any time, under regulations to preclude their taking advantage of a public customer.

Only exchange members may buy and sell futures contracts on the trading floor.

The exchange determines, with approval of the Commodity Futures Trading Commission (CFTC), what futures contracts will be traded on its floor. The exchange specifies the underlying commodity, the contract size, delivery months, how prices will be expressed, and daily price limits. The exchange also sets original and maintenance margin levels for its futures contracts; however, this activity is, as of this writing, expressly exempt from CFTC purview.

The exchange establishes and enforces the rules under which its futures contracts may be traded. The rules are designed to ensure free and orderly markets and to protect both the public customer and the commodity professional from damage. The exchange does not own any commodities.

Only individuals may be members of a futures exchange. When a major brokerage firm states that it belongs to the Chicago Mercantile Exchange (CME), for example, it means that an individual member of the CME has conferred his membership privileges on that firm. Exchange memberships are sold by the exchange when it is first established and whenever new memberships are made available, which is not often. Oth-

erwise, a new member must buy his or her "seat" from a present member. Seat prices on the two major futures exchanges in Chicago have ranged from $200,000 to just under $1 million in the past 20 years.

THE CLEARINGHOUSE

Each exchange has its own clearinghouse. At the end of each trading day, the clearinghouse takes the other side of every trade it clears. This action breaks the link between the original buyer and seller, making it possible for a trader to close out a futures or options position with simply an offsetting market transaction. There is no need for the original two parties to relocate each other or for both original parties to agree to undo the trade.

The clearinghouse serves two other vital functions: It warranties the financial integrity of each futures contract it clears, and it supervises deliveries made against futures contracts by holders of short positions.

To create the funds necessary to guarantee the financial stability of the futures markets it clears, the clearinghouse requires that each of its clearing members posts a guaranty deposit. The amount required is substantial. It may be in cash or letter of credit. If a member defaults, these funds may be drawn on to ensure that no public futures customer loses money as a result of the default. If the total of the guaranty deposits on hand is still not enough to cover a defaulting member's debits, the clearinghouse is authorized to levy a special pro-rata assessment on its members to make up the difference.

Mark to Market

Rules for the payment of variation margin to the clearinghouse are quite strict. There is no maintenance level or trigger point. Clearinghouse members' accounts are marked to the market at the end of each trading day, and all deficits must be covered before a certain time the next business morning. The clearinghouse is also empowered to issue calls for additional margin during the trading day if market conditions warrant and has done so on many occasions.

Traders who hold futures positions beyond the last trading day must settle their futures contracts by delivery or cash.

Delivery

The last day of trading in a futures contract is specified by the exchange; it will be a day during the delivery period, which is usually a calendar month. The last day of trading in December T-bond futures on the Chicago Board of Trade, for example, is the seventh business day from the end of December. After that date, the December T-bond futures contract for that year expires and is gone forever.

Traders who hold futures positions beyond the last trading day cannot close out their futures contracts with an offsetting futures transaction. Shorts will be expected to deliver the actual commodity to an exchange-designated delivery point; longs will be expected to take ownership of the actual commodity and pay for it in full. In cash-settled markets, the trader must at settlement pay or receive the difference between the cash price and the futures price.

The delivery process differs from exchange to exchange, but it generally starts when the short asks his broker to prepare a delivery notice. This notice is presented by the broker to the exchange clearinghouse, which assigns it to one of its clearing members with a long position still open on the clearinghouse books. The clearing member in turn assigns the notice to one of its customers who is still long.

The delivery process is generally initiated by the short position holder, who may choose any day during the delivery period.

On some exchanges, the assigned long may decline the notice by selling the equivalent number of new futures contracts short and passing the notice along, via the clearinghouse, to another long. On others, a delivery notice cannot be passed along; it must be accepted and the cash commodity received and paid for.

Only individuals may be members of a futures exchange.

The form of delivery varies with the commodity. Evidence of delivery in the grains may be a warehouse receipt for actual grain stored in some

distant location. Cotton can be delivered into any one of five licensed southern warehouses. "Delivery" of stock index futures involves only the transfer of cash. A trader who accepts delivery against a long position in deutsche mark futures receives a credit for deutsche marks in a German bank designated by the clearinghouse. Delivery against a short position in T-bond futures results in a book-entry transfer of ownership of the cash bonds; no actual bond certificates change hands.

In some instances, more than one grade of the commodity is deliverable against the futures contract. The epitome is the T-bond futures contract. Much has been written on the selection of the optimum cash bond to deliver because it may be chosen from among all outstanding Treasury bonds with at least 15 years to maturity.

Delivery against a futures contract was a relatively rare occurrence in the past. Producers, processors, and distributors of foods, metals, and fibers used the futures markets to hedge against price risk but continued to conduct their normal day-to-day cash business with their regular customers. With the advent of financial futures, delivery against futures contracts has become more common. In fact, some financial futures traders take their positions for the express purpose of making or taking delivery.

Delivery procedures vary, and a close examination of them is beyond the scope of this book. If you intend to become involved with the making or taking of delivery against a futures contract, be sure to acquaint yourself beforehand with the intricacies of that particular market.

THE FUTURES COMMISSION MERCHANT

FCMs are the most visible members of the futures industry. They have names like Merrill Lynch, Smith Barney, and Dean Witter. The FCM is the private individual trader's link to the futures and option markets. The FCM carries the public customer's account. It accepts and holds margin money for the customer. It executes his trades, reports back on the outcome, and maintains a complete record of the customer's open positions, cash balance, and profit and loss. It provides current market information and research reports on historical price activity.

Opening an Account

When you open a futures or options account with an FCM, you will be required to fill out and sign several forms. One form is personal information. Another concerns your income and net worth and asks many of the same questions you would find on a loan application. Your broker is required by

law to have these data, because it is his responsibility to qualify you under a "know-your-customer" rule. If he considers that you do not have the financial wherewithal to take on the risks associated with futures or options trading, he should refuse to open your account.

The most important form, from the standpoint of your broker, is called something like "Commodity Account Agreement." It identifies whether the account is for hedging or speculating. It identifies the owner of the account, which can be a single individual, two or more parties in joint form, a partnership, or a corporation.

The Commodity Account Agreement also contains a "Transfer of Funds Authorization." This paragraph gives your broker an advance okay to move your money around if you are on margin call and for some reason do not meet it. The actions he is authorized to take include closing out the futures position that created the margin call or transferring money from another of your accounts with the firm to your commodity account to cover the deficit.

SUGGESTED READING

The Complete Guide to the Futures Markets, Jack Schwager. Wiley, New York, 1984.

Fundamental Analysis

If you could buy a copy of next week's *Wall Street Journal,* there would soon be buildings with your name on them. Correctly assessing where prices will be in coming days or weeks is an important element in successful futures trading. No player is exempt. Price increases generate gains for the longs and losses for the shorts. When prices decline, the shorts gain what the longs lose.

If you exclude tea leaves and fortunetellers, there are two approaches to futures price forecasting. The first involves evaluating the supply of and demand for the actual commodity, on the premise that a short supply or high demand will cause prices to rise, and vice versa. This approach is called *fundamental analysis.*

The other major school of thought is referred to as *technical analysis.* The pure technical analyst disregards any information about the supply of and demand for the actual commodity. He focuses his attention instead on the futures market itself, on the assumption that no matter what the fundamentals portend, the effects will show up in the behavior of price, trading volume, and open interest.

We'll look at both approaches.

FUNDAMENTAL FACTORS

Every significant commodity price move in the history of futures trading has been rooted in fundamental factors. Unless there is a true shortage or surplus of the actual commodity, unusually low or high prices cannot be maintained. Remember the soybean futures chart we showed you in Chapter 2; prices rocketed upward and then, a few days later, were right back where they started. That was an example of a price move fueled entirely by traders' expectations.

There have been some spectacular sustained futures price moves when fundamental factors were the engine. Blight sent corn prices from $1.40 to $3.90 a bushel in 1973 and 1974. Bumper corn crops in the following 3 years finally drove prices back down to $1.80 again.

Every significant commodity price move in the history of futures trading has been rooted in fundamental factors. Unless there is a true shortage or surplus of the actual commodity, unusually low or high prices cannot be maintained.

After hovering between 2 cents and 10 cents a pound for 9 years, sugar prices responded to a worldwide shortage by soaring to 67 cents a pound in 1974.

The combination of reduced world supply and growing industrial demand propelled copper futures prices from 60 cents to $1.70 a pound in 1988. More recently, grain and soybean prices soared to new record highs on small current supply and prospects for modest yields in the coming crop year.

Deutsche mark, Japanese yen, and Swiss franc futures staged a virtually unbroken rally from early 1985 to late 1987, more than doubling in price. The cause: not short-term expectations but an inexorable world demand for the foreign currencies from buyers spending U.S. dollars abroad.

Supply and Demand

The fundamental analyst tries to estimate how much of the commodity will be around in coming months and how much demand there will be for it. The supply of a commodity comprises imports, current production, and

any carryover from previous years. Consumption is the sum of domestic use and exports.

For example, for an agricultural field commodity, the fundamental analyst would consider planting intentions, yield per acre, forecast weather in growing areas, probability of crop disease, the prices of competing commodities, government loan levels, and current supplies on hand. These same data would also be considered for foreign growing areas, to evaluate potential U.S. exports.

The fundamental analyst tries to estimate how much of the commodity will be around in coming months and how much demand there will be for it.

Fundamentals for cattle, hog, and pork belly futures include farmers' farrowing intentions, expected litter size, the number of animals currently on feed, prices for competing red meats, trends in consumption, and the present status of the livestock price "cycle."

A trader of copper futures would be interested in the level of mining activity, housing starts, the amount of copper resting in the London Metal Exchange (LME) and other storehouses around the world, and the potential for political unrest in foreign producing areas. Platinum traders keep an eye on automobile production. Gold has a dual role: in jewelry and as a worldwide store of value when rampant inflation or armed conflict creates a temporary mistrust of paper currencies.

Frozen concentrated orange juice (FCOJ) is the futures market most susceptible to weather. Even the hint of a coming winter freeze in the Florida growing area will send prices soaring. Less violent fundamental factors include the anticipated size of the orange crop in the United States and other growing nations, yield, and crop disease.

Coffee has less of a reputation as a weather-driven market, but it can be just as violent. As Figure 3 shows, in late June and early July 1995 (their winter, our summer), a hard freeze sent prices limit up for 13 out of 14 days, literally doubling the price of coffee futures.

Fundamental analysis of the financial futures requires a somewhat different approach. In some instances, the supply is virtually unlimited. In others, there is no tangible asset underlying the futures contract, and settlement is by cash only.

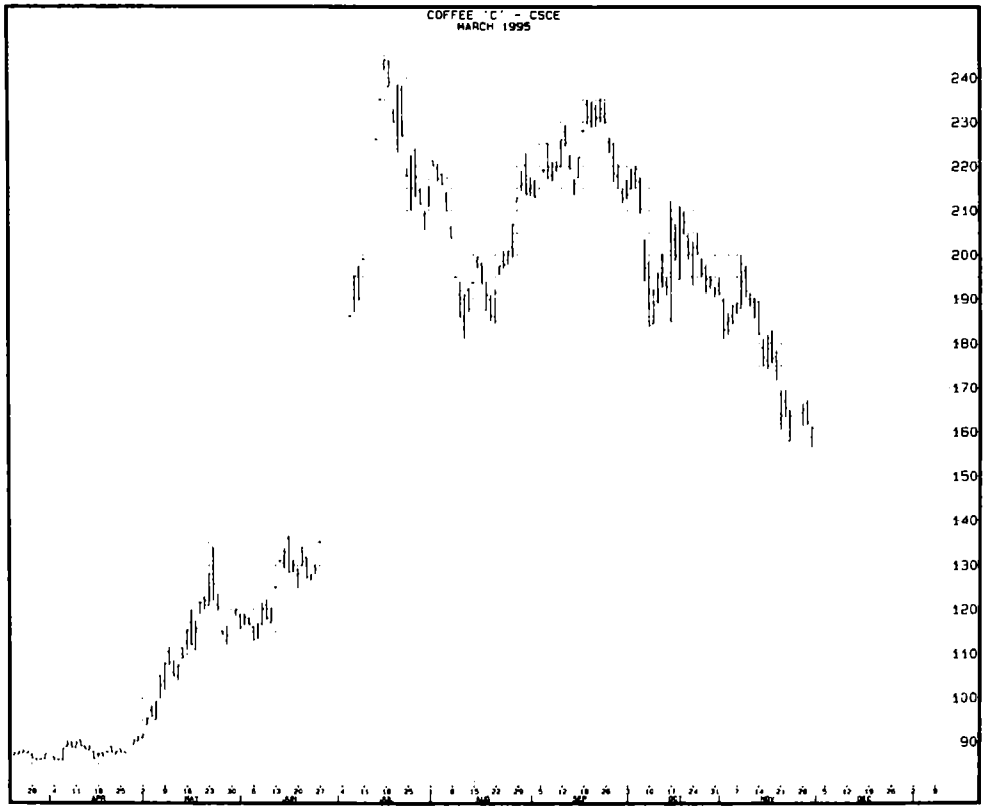

Figure 3 In July 1995 coffee reminded traders that frozen concentrated orange juice is not the only weather market; a deep freeze in coffee-growing areas drove prices limit up for almost 2 weeks. By the time the rally ended, prices had gained 80 percent from their spring trading range. Chart courtesy of *CRB Futures Perspective*, a publication of BRIDGE Information Systems.

The supply of a commodity comprises imports, current production, and any carryover from previous years. Consumption is the sum of domestic use and exports.

The most popular financial futures market is Eurodollars (U.S. dollars on deposit in banks outside the United States). Next are two fixed-income securities issued by the U.S. Treasury: Treasury bonds and Treasury notes.

Prices in these markets are tied directly to interest rates. If interest rates rise, the prices of these securities go down. If interest rates fall, the prices of these securities rise. Fundamental analysis therefore is directed at projecting the course of interest rates; that involves many complex economic variables, including the demand for loans, interest rates on other instruments such as commercial paper and certificates of deposit (CDs), the prime rate, the discount rate, prevailing interest rates in other nations, current policies of the Federal Reserve Board, and the general health of the U.S. economy.

Stock index futures were the first futures markets based on an intangible asset. The "delivery unit" underlying the futures contract is the value of the index, not actual shares of stock, and settlement is by cash only.

Because each index represents a large number of different stocks, fundamental analysis involves not the assessment of individual stocks but the factors that contribute to overall market movement. These include the present state of the business cycle, interest rates, the relative strengths of U.S. and foreign currencies, the amounts of money available for investment, and investor confidence in the U.S. economy.

Demand for foreign currencies is based largely on a nation's shopping habits. If a U.S. retailer imports watches made in Switzerland, he must pay for them with Swiss francs. He buys the Swiss francs with U.S. dollars. This action causes the value of the Swiss franc to rise relative to the U.S. dollar. An American manufacturer who sells products in England would receive British pounds in payment. He would buy U.S. dollars with them because he can't use pounds to buy materials and pay workers in the United States, and that would have the opposite effect; it would cause the value of the U.S. dollar to rise relative to the pound.

There are other reasons that currencies flow from one nation to another. An unusually high rate of interest or a strongly bullish stock market will attract foreign capital; investors from other nations buy U.S. dollars with their currencies, then use those dollars to buy stocks or bonds in U.S. markets. Tourists buy foreign currencies to spend for hotels, meals, and shopping overseas. When the United States grants economic aid to a foreign nation, the U.S. dollars granted must be converted to that nation's currency before the money can be put to work there. Some developing nations park their cash reserves in one or more foreign currencies.

Note that the examples in the preceding paragraph all relate to demand. The supply of a foreign currency is not a price factor. Except in unusual cases where the government steps in to curtail the movement of its currency in foreign markets, the supply is virtually unlimited.

Commodities whose principal source is overseas present special problems for the fundamental analysts. Sugar, cocoa, coffee, and petroleum are subject to international commodity agreements about price controls and production quotas. Reliable information may be difficult to come by. Nations take steps to protect their own currencies or economies and may not be open and aboveboard about their activities. The briefing sheets in Chapter 16 list some of the public sources of information on foreign commodities that have proven reliable over the years.

THE IMPORTANCE OF PERSPECTIVE

Suppose you saw in the newspaper that the U.S. trade deficit last year was $160 billion. Is that bullish or bearish for the major foreign currencies? Will it affect interest rates? Could U.S. exports of commodities be curtailed as a result?

If you are long copper futures and read a report that 1.4 million new housing starts are expected next year, what does that mean? Is that a lot of starts? Is the news likely to affect copper prices?

You have to be able to make comparisons between today's situation and prior situations; to see, for example, where prices were the last time these particular supply and demand conditions prevailed.

You can't answer fundamental questions like these without more information. You have to be able to make comparisons between today's situation and prior situations; to see, for example, where prices were the last time these particular supply and demand conditions prevailed. Projected housing starts of 1.4 million may be bullish for copper prices if the starts constitute an increase of 20 percent over last year; the same housing report could have a depressing effect on the price of copper tubing and wire if 1.4 million was a surprisingly low number of starts.

It's also important that you evaluate any long-range trends in price, consumption, and usage. This leads to still more questions. Is aluminum wiring replacing copper? What is the projected rate of new family formation next year? What kinds of homes will be built? Do they use more or less wire and tubing than the standard detached single-family dwelling?

These are factors that affect copper prices. But you don't own copper. You own copper *futures*, and there's a subtle difference. It's possible that a fundamental report that looks bullish on its face could turn out to be neutral or even negative for futures prices. The reason would be that the futures price had already discounted the report; the report was already "in the market." The bulk of traders had *expected* a sharp increase in projected housing starts and had bought futures contracts in anticipation. The publication of the expected numbers caused no new buying.

Disappearing Qualifiers

You may have played this game when you were younger. Participants sit in a circle. The one who starts the game writes a simple message down, so it can be later verified, and then relates it verbally to the person sitting next to him. That person repeats it to the next person, and so on, until it gets back to the one who started it. What comes back is compared to the original written message, and the results are often surprising. What happens invariably is that the qualifiers disappear. What began as "Tom will have almost twenty dollars by next Friday" comes back as "Tom has twenty dollars."

An ostensibly bullish or bearish government report will not move prices if traders expected the report and have already bought or sold futures in anticipation.

The same pitfall awaits the fundamental analyst. Many assumptions will have gone into the final conclusion that, say, gold should reach $425 an ounce by next spring. But the longer you look at the number "425" the easier it is for you to forget about the "guesstimates" that were made in arriving at that number. The number, viewed alone, implies arithmetic precision and accuracy.

Some fundamental analysts try to elude this trap by avoiding single numbers in any of their data. If they were analyzing hog prices, for example, they would translate the number of hogs and pigs on farms, stated farrowing intentions, expected pigs per litter, and the resulting price estimate into probable ranges. This approach to fundamental analysis has been refined by Jack Schwager, whose book is referenced at the end of this chapter.

Finding the Information

The data you need for effective fundamental analysis are not easy to find; at least, not all in one place. The U.S. department of Agriculture is a repository of vast amounts of background information on the agricultural commodities, and much of it is published in periodic reports. The balance is buried in the files. Likewise, the U.S. Geological Survey is a good source of data on the production and consumption of metals; the Federal Reserve keeps track of a large number of economic indicators and measures that bear on the future course of interest rates; the Department of Commerce has information to help you determine the health of the U.S. dollar.

There are many journals, newsletters, and charting services that deal with futures price forecasting. Some are purely technical, some are purely fundamental, and some combine both kinds of analysis to arrive at their conclusions. A listing of these periodicals, their contents, and where they may be obtained is presented in *Investment Publications,* which is published by the International Publishing Company, 625 Michigan Avenue (Suite 1920), Chicago, IL 60611.

There are also private or nongovernment sources of fundamental data. The most notable is *Commodity Year Book.* Published each year for 50 years by Commodity Research Bureau, the Year Book contains historical charts and tables for more than 100 commodities, including all of the major futures markets.

That's all we are going to say about fundamental analysis here. Individual briefing sheets in Chapter 16 contain a description of each commodity, where it is grown or produced, pertinent fundamental factors, data on the futures contract, and where you can find out more about that market.

SUGGESTED READING

Commodity Year Book. BRIDGE Information Systems, Inc., Chicago (annual).

Fundamental Analysis, Jack Schwager. Schwager on Futures Series, Wiley, New York, 1995.

Chapter 10

Technical Analysis

There are two important differences between fundamental and technical analysis. Fundamental analysis of futures markets is characterized by a great deal of subjective information; it is used to forecast price movement over several weeks or months. The technical analyst deals with only three pieces of data: price, trading volume, and open interest. He evaluates them to form an opinion on the likely direction of prices over the next several days.

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As we saw earlier, financial periodicals report four prices for each day's activity in a futures contract: the day's opening price, high, low, and settlement or closing price. (Some newspapers omit the opening price.) Of the four, the closing price is generally considered to be the most meaningful, as it represents the day's final verdict. The opening price is the least significant because it is often distorted by the overnight buildup of market orders.

In the simplest context, a rise in prices reflects growing demand for the futures contract. If the trading volume increases when prices rise, it is a sign that there is interest in the rally—that the price increase is attracting followers. That's a bullish omen. Rising open interest would further strengthen the technical picture, as it would indicate that new buyers are entering the fray.

There are several other combinations of these three factors, and each holds a different meaning for the technical analyst. We'll see how they work. But first there are some other things you should know.

PRICE TREND

A trend is the tendency for prices (or any other value) to move more in one direction than the other. A number of years ago, when gasoline supplies were short and prices soared, increasing numbers of light, fuel-efficient automobiles were made. There was a trend toward small cars. If you wanted to place a bet that tomorrow's outside temperature would be higher than today's, you would choose the springtime to do so (in the Northern Hemisphere), because temperatures are trending higher at that time of year. If you have ever sat on an ocean beach and watched the tide come in, you have observed an uptrend. Each wave tends to lap a bit higher on the sand and to recede a bit less.

An uptrend on a price chart looks very much like an incoming ocean tide. Each peak is higher than the previous peak, and each valley is higher than the previous valley. Figure 4 is a good example. The series of higher highs and higher lows in March 1997 corn lasted from January through most of July. The resulting price gain of 35 percent qualifies this as a major uptrend.

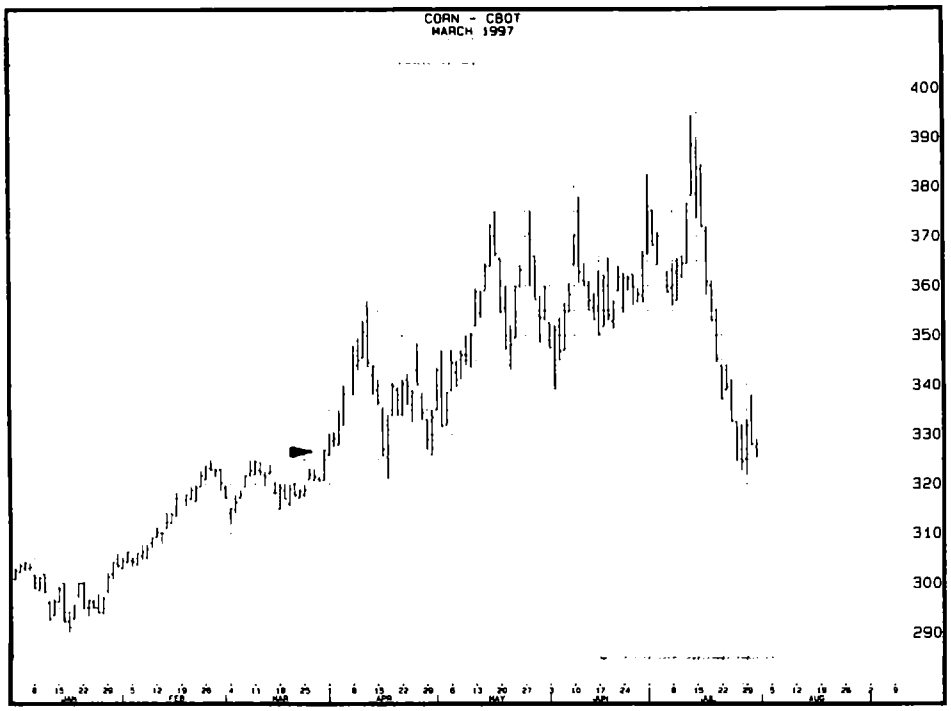

Figure 4 A chart uptrend is identified by climbing "stairsteps." At least four points are required: a low, a high, a higher low, and a higher high. An upward trend in this market began with the low of $2.90 on January 19; however, the trend could not be confirmed until March 31 (arrow), when prices closed above the peak reached on March 11. Chart courtesy of *CRB Futures Perspective*, a publication of BRIDGE Information Systems.

A trend is the tendency for prices (or any other value) to move more in one direction than the other.

A downtrend in prices is characterized by a series of lower highs and lower lows, as shown in Figure 5. The lower trend was confirmed on June 2, when the closing price for December soybean oil fell below the watermark set the previous week. This particular trend lasted about 2 months,

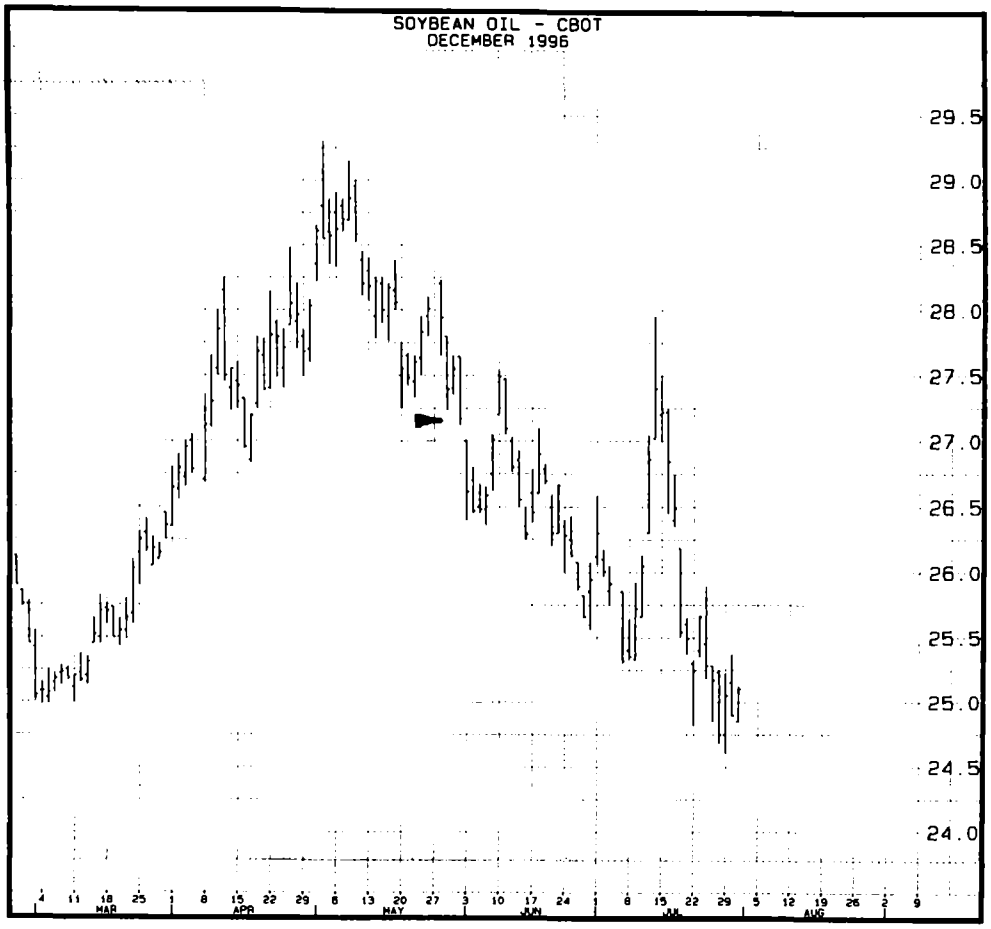

Figure 5 In a chart downtrend, the same rules as for uptrends apply, but the stairsteps go down. The four points are the high on May 4, the low on May 20, the lower high on May 30, and the lower low on June 2 (arrow), which officially confirmed that the chart trend was downward. Chart courtesy of *CRB Futures Perspective*, a publication of BRIDGE Information Systems.

when dry weather and reported shortages of soybeans in storage triggered an explosive rally.

When prices have no apparent direction, as they did for 3 years in Figure 6, the trend is referred to as sideways or neutral.

History has shown that established price trends in futures markets tend to persist; that is why they fascinate traders. The existence of a trend increases, the probability that tomorrow's price will be higher or lower than today's, and a trader can use that information to very good advantage.

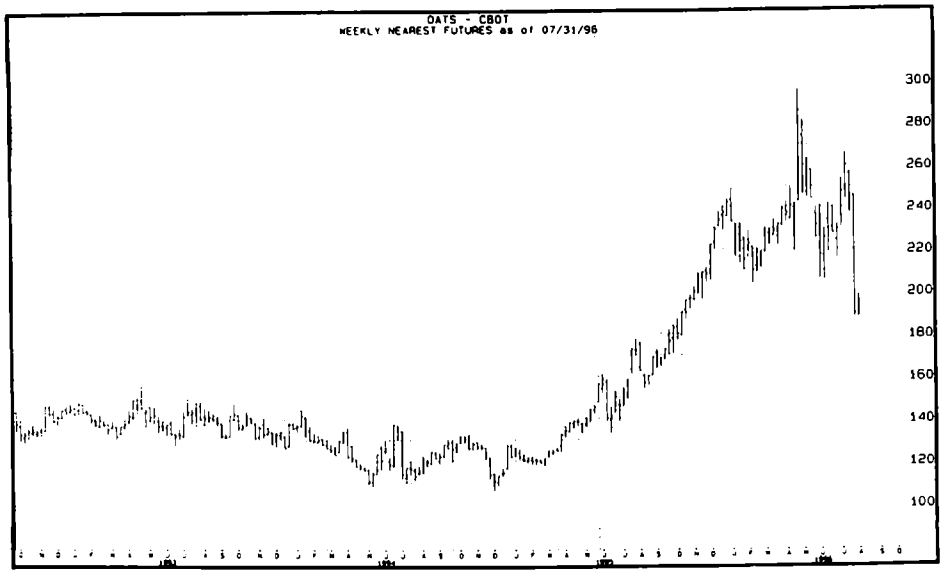

Figure 6 Extended up- or downtrends are not commonplace. Futures prices spend most of their time in trendless price action. Prices in this market, for example, wandered aimlessly between $1.20 and $1.50 a bushel for many months before starting to trend higher. Chart courtesy of *CRB Futures Perspective*, a publication of BRIDGE Information Systems.

TRENDLINES

Technical analysts often draw a straight line through the extreme lows in an established chart uptrend (Figure 7). This is called an *up trendline* and is used as a reference. A *down trendline* is drawn through the extreme highs, as shown in Figure 8.

Trendlines serve several purposes. One purpose is for warning. If prices break through a well-established trendline, it is an indication that the ongoing trend is losing its force. Figure 7 provides an example. After trending higher for 4 months, prices suddenly broke down through the trendline at $1920, flashing the signal that the uptrend had run its course.

A trendline can also be used to enter a market. In Figure 9, for example, if you were convinced in early 1996 that the uptrend was well established and that prices were headed a great dealer higher, pullbacks to the trendline (as in mid-April) would have provided logical points to take

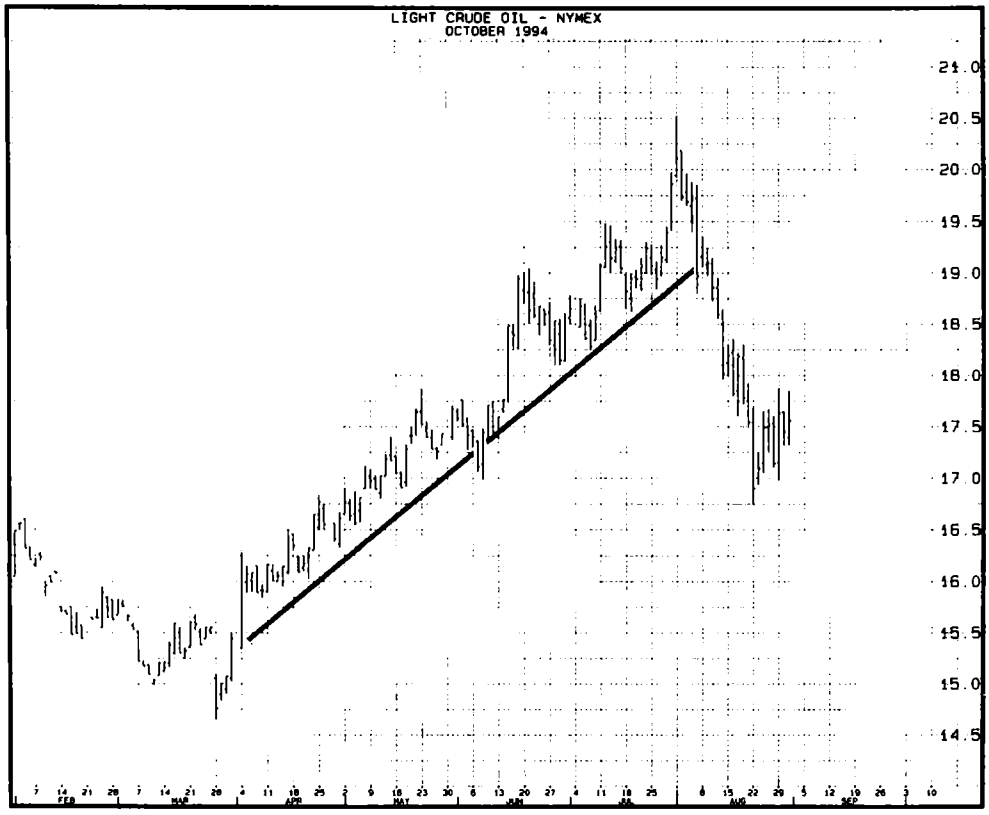

Figure 7 An up trendline is drawn across the extreme lows. A minimum of two reference points is required. In this chart for crude oil, they were in place in early June. Further reference points, like the lows in July, serve to strengthen the trendline's credibility. Breaking of an established trendline, as happened here on August 5, is a sign that the trend is faltering and may be about to change. It was true in this case. Chart courtesy of *CRB Futures Perspective*, a publication of BRIDGE Information Systems.

your long position. The probability of short-term adverse (downward) price movement would be minimized, because to do so would require breaking the trendline. And you can place a sell stop order just below the trendline to get you out of the market immediately if prices did continue to fall and the trendline was broken.

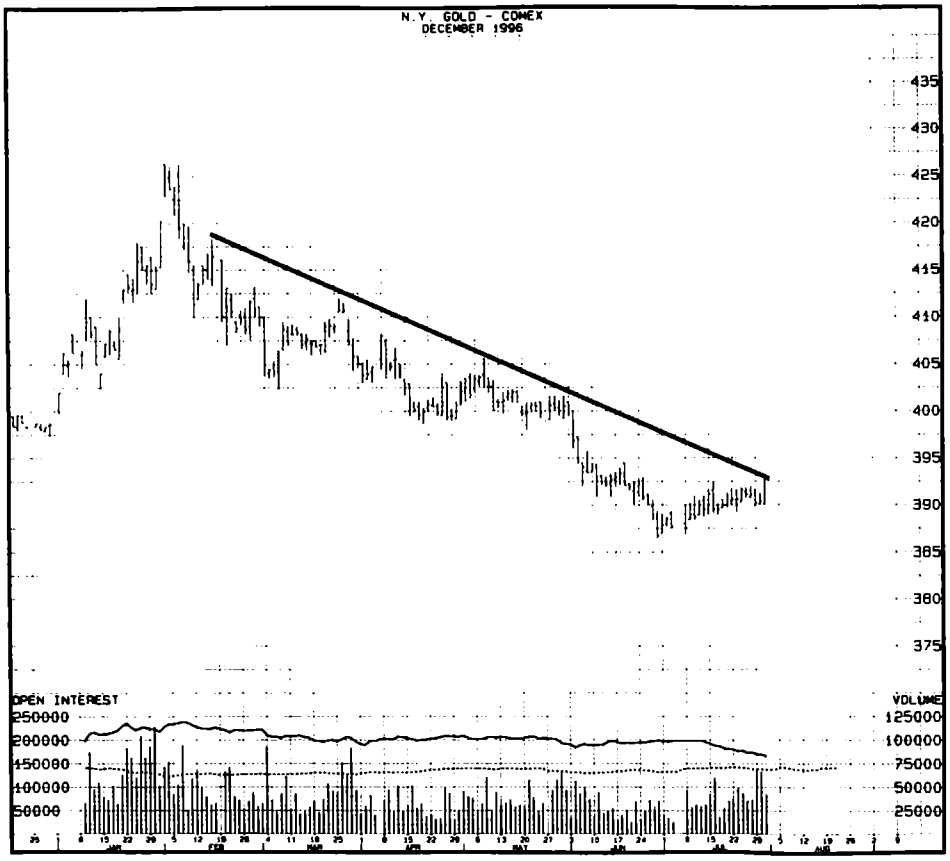

Figure 8 A typical down trendline, drawn across the extreme highs. Chart courtesy of *CRB Futures Perspective*, a publication of BRIDGE Information Systems.

Breaking of a trendline means the current trend is losing its zip; it does not mean that the opposite price trend has begun. Few trends change course abruptly. There is almost always an interim period of trendless activity before any new sustained upward or downward price movement begins.

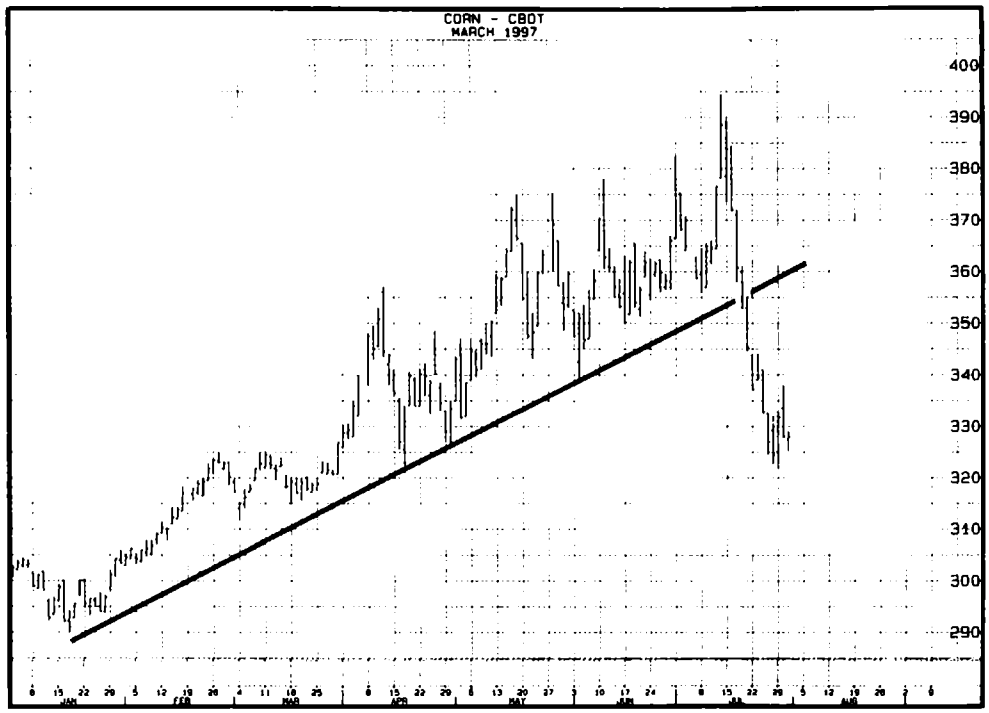

Figure 9 When prices approach an established trendline, a good case can be made for choosing that site to enter or leave a market. This chart provides an example. The higher trend was in place in March. In the following weeks, prices returned to the trendline on several occasions, offering bulls an opportunity to take long positions with relatively low technical risk. Chart courtesy of *CRB Futures Perspective*, a publication of BRIDGE Information Systems.

SUPPORT AND RESISTANCE

"Prices met support and closed higher for the day." You've probably heard or read a statement something like that. If you didn't know what the word *support* meant, you probably shrugged the comment off as market double-talk.

The price level where a decline may be expected to stop is called a *price support level.*

The fact is, prices tend to stop where they have stopped before.

A rally will tend to fade and prices turn back down again near the point where the previous rally ended. A decline will tend to stop at or near the price where the previous decline stopped.

The price level where a decline may be expected to stop is called a *price support level.* Prices receive support from below. The price level where a rally can be expected to run into trouble is called a *price resistance level.* Sellers there resist any further advances.

The rationale for support and resistance levels is found in human nature. When prices move, three groups of participants are affected. Traders on the right side of the market begin to accrue profits. Traders on the wrong side of the market watch uncomfortably as their paper losses mount. And traders who had intended to be on the right side of the market but who never got around to acting on their beliefs are kicking themselves.

The price level where a rally can be expected to run into trouble is called a *price resistance level.*

Now what happens if prices return to the point where they started? Traders on the right side of the market consider adding to their positions because the market has demonstrated its ability to move in their direction. Traders on the wrong side of the market, after sweating through a period of paper losses, heave a sigh of relief as they close out their positions with small debits. And the intended, who missed the boat the first time, make sure they won't miss it again.

That's a lot of kinetic energy, and it's all pointing in the same direction.

To take a specific example, suppose copper futures prices had been declining for several months. The decline stopped around 83.50 cents per pound; prices milled about for several weeks and then rallied sharply to 90.00 in what looked like the beginning of a sustained upward move. The longs are smiling, the shorts are looking for an exit, and the bulls in the wings are wondering why they didn't take their long positions last week.

When copper futures prices retreat to 84.00, all three groups are galvanized into action—the longs to add to their positions, now that the market has demonstrated its buoyancy; the shorts to close out their losing

positions; and the intended bulls, who now have an unexpected second chance to get aboard. The buying of these three groups stops the decline near the point where it started, the previous low. Prices have found support at that level.

Prices tend to stop where they have stopped before.

Price resistance involves the same psychology but with the picture inverted. Sellers are waiting overhead to roadblock a rally.

Figure 10 provides examples of both of these technical phenomena on the hogs (lean) futures market at the Chicago Mercantile Exchange.

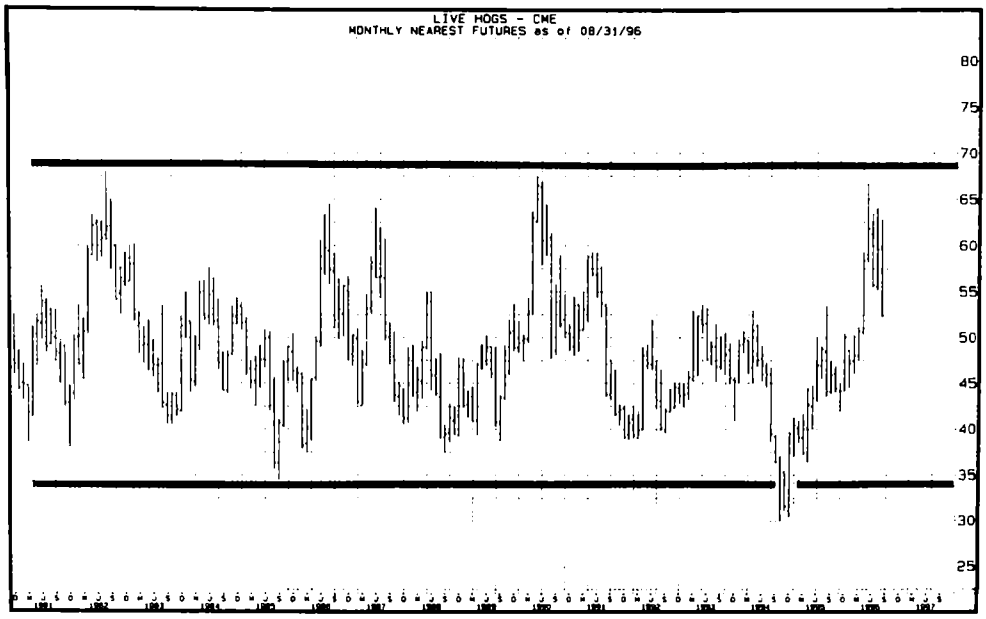

Figure 10 The persistence of price support and resistance levels can be seen in this monthly futures chart for hog futures. During the 16 years shown in the chart, the band of resistance between 65 and 67 cents stopped rallies on five occasions; the 35-cent level provided support seven different times. Chart courtesy of *CRB Futures Perspective*, a publication of BRIDGE Information Systems.

Other Locations

Price support and resistance are found at locations other than previous highs or lows. When prices move within a narrow range for several weeks, they form what is called a price congestion area. This area will provide support when prices approach it from above and resistance when prices approach it from below. An example of the former is shown in Figure 11.

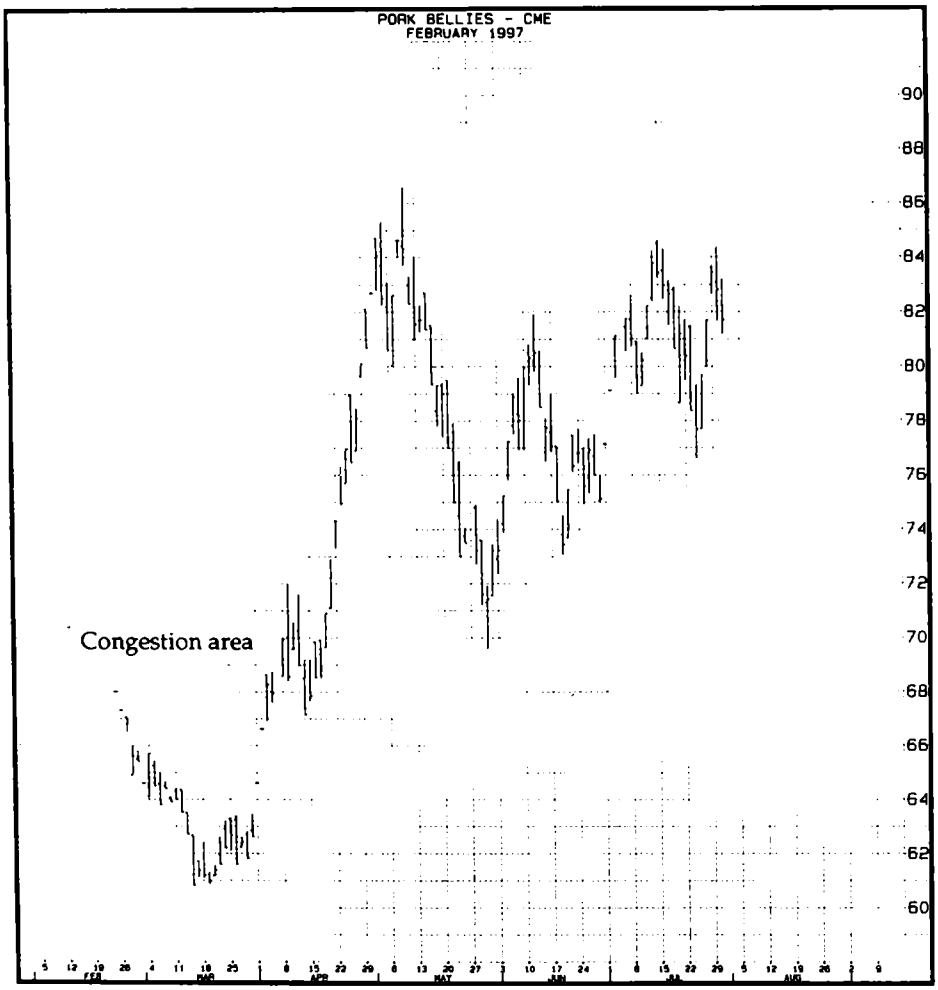

Figure 11 Congestion areas, where prices have traded in a relatively narrow range for several days, can later act as roadblocks. In this example, a 3-week congestion area was formed between 67 cents and 72 cents in early April. When prices returned to that area in late May, support there not only halted the decline, it provided the foundation for a strong rally. Chart courtesy of *CRB Futures Perspective*, a publication of BRIDGE Information Systems.

To see another example, flip back to Figure 3, where we showed you a runaway coffee market. The chart is on page 62. As you can see, coffee prices paused for just 2 days on their vertical ascent to 8-year highs. Yet that small congestion area blocked declines on five separate occasions before giving way in mid-November.

Somewhat weaker support and resistance are also found at price *gaps*, which are simply areas on the chart where no trading took place.

Role Changing

An established support level, once broken, will reverse its role and act as resistance the next time prices approach it from below. A resistance level that has been surpassed will provide support if prices should later fall back to that level. An example of this chameleon-like change from support to resistance is shown in Figure 12.

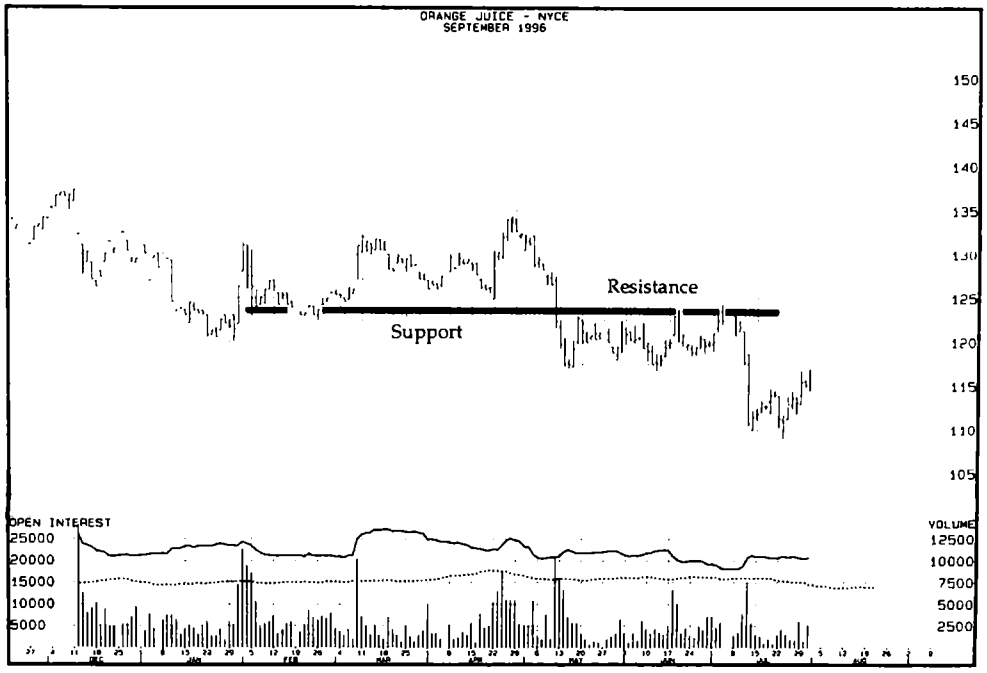

Figure 12 Support and resistance often swap roles. Support near $1.23 per pound, which had twice stopped declines in FCOJ early in the year, finally yielded in mid-May. In the following weeks, that same level acted as resistance on four occasions. Chart courtesy of *CRB Futures Perspective*, a publication of BRIDGE Information Systems.

Chart Patterns

A table of commodity prices in the newspaper is a snapshot of price action. A price chart is a moving picture of the conflict between the bulls and the bears. A chart provides a valuable perspective. It permits comparison between today's price action and previous action. It enables the technical analyst to spot when prices have moved into new high or low ground.

Certain chart patterns have over the years become associated with particular kinds of price behavior.

Rectangles

Many technical analysts consider the rectangular price pattern the most meaningful. The pattern is formed by trading for several weeks or even months in a relatively narrow horizontal price range. It is completed when prices then suddenly break out.

Some technical analysts refer to this chart pattern as a "coil," in the sense that prices are coiling to strike sharply higher or lower. It is true that an extended price move in the direction of the breakout usually follows. An example of a rectangular price pattern is shown in Figure 13.

This phenomenon makes sense if we look at the rectangle in the same way as we did support and resistance levels. As depicted along the bottom of the chart, total trading volume during the 6 months while this rectangle was forming was 1.62 million futures contracts. That means there were 1.62 million new short positions and 1.62 million new long positions established during the period. Even after allowing for multiple contract positions and traders who were in and out and back in again, the great majority of the traders in this market had a vested interest in the narrow price range.

When prices leave that range, market participants will behave characteristically. If the breakout is to the upside, longs will add to their winning positions; bulls on the sidelines, seeing the breakout, will start to buy. Most important, however, are the existing shorts, who represent a large reservoir of potential buying power. As prices move higher, their losses mount; gradually they will give up hope and buy futures to cover their short positions, adding more fuel to the rally.

Rectangles may be found at major price turning points. They may also represent price consolidation; that is, sometimes prices will wander around inside a rectangle for several weeks and then resume their previous trend. It is difficult to tell before prices break out of a rectangle just

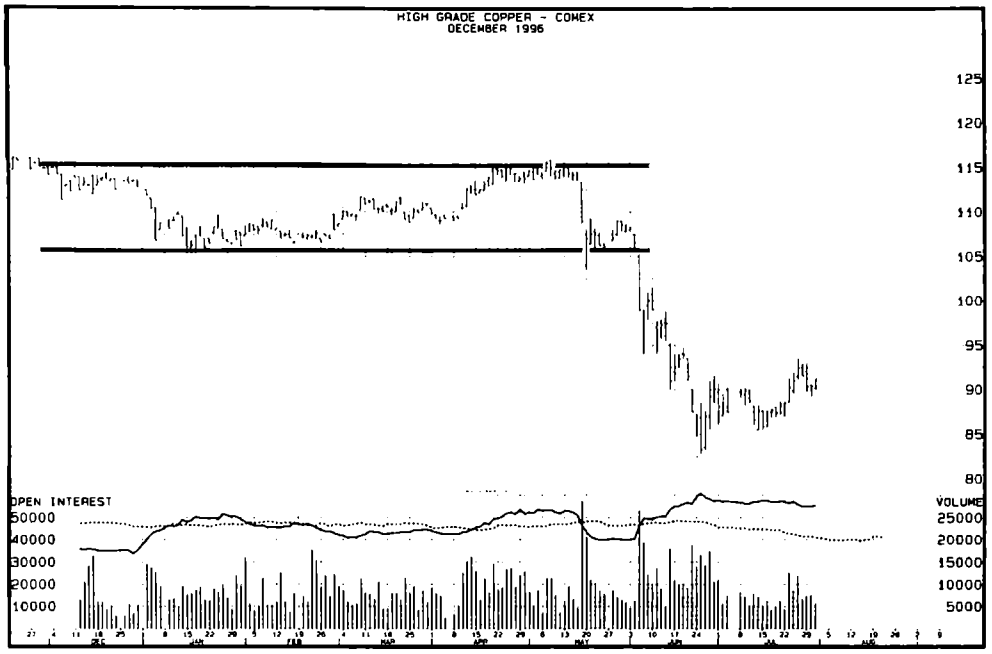

Figure 13 A rectangular price pattern is formed when overhead resistance and underlying support trap prices in a narrow horizontal trading range for several weeks or months, as in this copper chart. The pattern ends when one or the other—bulls or bears—finally prevails. The ensuing price move is often extensive. Chart courtesy of *CRB Futures Perspective*, a publication of BRIDGE Information Systems.

which direction the next move will be, but there may be hints. If prices are historically high when the rectangle forms, the probabilities would favor a downside breakout. The opposite would be true if prices were at 10-year lows.

Anthony Reinach writes that prices tend to leave a rectangle through the boundary where they have lately spent the *least* time (*The Fastest Game in Town*, Commodity Research Bureau, New York, 1973). To put it another way, if price action has been concentrated in the bottom half of the rectangle during the most recent trading activity, the odds favor an exit through the top and vice versa. As you can see, this thesis was borne out in Figure 13.

There are several other bar chart patterns that technicians recognize, in addition to rectangles. Some patterns contain forecasting power; others are noncommittal. If the subject has caught your interest, you will find them discussed in Appendix A.

Failed Signals

If prices fail to follow through—if they break out of an established pattern and immediately stall—it is a sign that the breakout was counterfeit and that the most likely course of prices in coming days is *opposite* to the breakout. This doesn't happen very often, but some chartists consider this particular event one of the most important chart signals.

Candlestick Charts

Candlestick charts originated in Japan more than a century ago. They derive their name from their appearance: Each day's price action looks like a candle with a wick sticking out of one or both ends.

Construction of a candlestick chart is not complicated. As in a bar chart, each day's high and low price is marked by the top and bottom of a single vertical line. In a candlestick chart, however, there is a narrow cylinder wrapped around the line. This cylinder (the candle) provides two pieces of information. Its *color* shows where that day's closing price was in relation to the opening price. If the closing was higher than the opening price (a bullish portent), the candle is left white; if the close was lower than the open (indicating a bearish tone), the candle is colored black. The candle's *length* represents the distance between the opening and closing prices. (See Figure 14.)

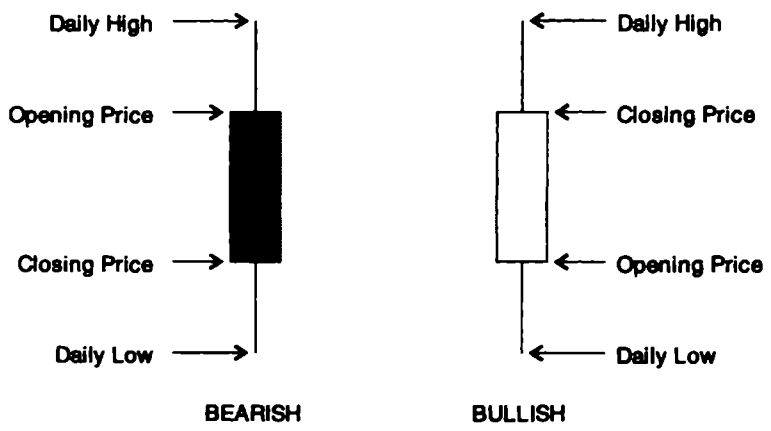

Figure 14 Depicted are two representative days of candlestick chart price action. In the presentation on the left, the day's closing price was below the day's opening price, indicating a bearish undertone; the candlestick is colored black. In the presentation on the right, the situation is reversed. The closing price is higher than the opening price, evidence of a strong day. The candlestick is left white.

Because bearish days have black candlesticks and bullish days have white candlesticks, it is possible to tell at a glance which kinds of days dominate the chart.

There are many chart phenomena common to both bar charts and candlestick charts, and they are interpreted in similar fashion. There are also candlestick patterns that have no counterpart in bar charts; they are strictly candlestick patterns and are interpreted according to the special rules surrounding this Oriental discipline. Some of the latter are shown in Figure 15.

As with most technical tools, candlestick charts are of greatest value when used in conjunction with other indicators of market strength or weakness.

For more on building and interpreting candlestick charts, *Trading Applications of Japanese Candlestick Charting*, referenced at the end of this chapter, is an excellent source.

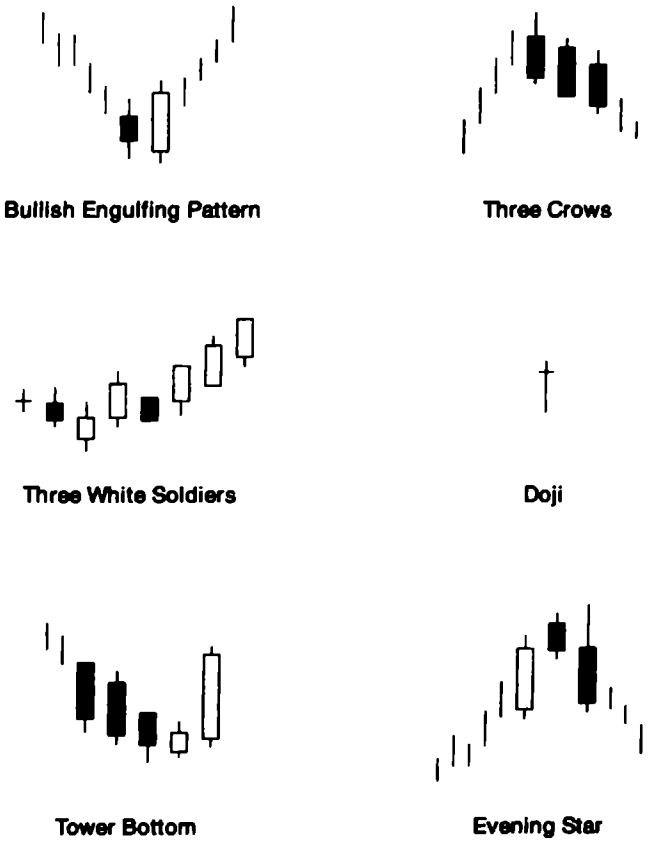

Figure 15 Candle price patterns are associated with the reversal or weakening of the current trend. Shown here are some of the patterns unique to candlestick charting.

Point-and-Figure Charts

There is another kind of price chart that technicians use. It is called a point-and-figure chart, and it is more than a record of prices. It comprises a well-defined trading method.

The point-and-figure chart is typically hand-drawn and posted daily by the chartist. Figure 16 shows a typical example. Prices are on the lefthand scale, in the spaces between the lines. There is no calendar across the bottom; point-and-figure charts are kept without regard to time. The X symbol is used to record rallies and the O to record declines. Each time the chartist shifts from one symbol to another, he begins a new column to the right.

If a price breakout is immediately followed by stalling price action, the breakout was false, and price movement in the *opposite* direction is more likely.

The size of each "box" is chosen by the chartist. It is generally some conveniently divisible number. For example, if you were constructing a point-and-figure chart for hog futures, you might assign each box the value of 20 points. If a rally were underway and Xs were being plotted, a new X would be added to the top of the column with every 20-point gain. If prices were falling and Os were being plotted, a new O would be added to the bottom of the column each time the price fell by another 20 points.

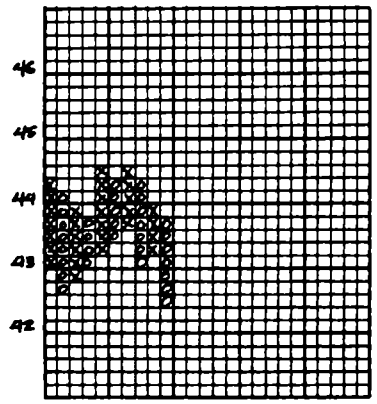

Figure 16 A typical point-and-figure chart. Prices are in the spaces rather than on the lines. Xs are used to record advances, Os to record declines; a new column to the right is started when the trend reverses. More than a record of prices, the point-and-figure chart is a complete trading method.

Shifting from Xs to Os (or vice versa) is called reversal, and the chartist has to decide how far prices must move against the prevailing trend before he shifts to the next column to the right and starts plotting the other symbol. A "three-box" reversal criterion is common; that is, if prices would fill three or more boxes in the direction opposite to the direction you have been plotting, you move one column to the right and shift symbols.

Appendix B presents further information about these unusual charts, including how to get a point-and-figure chart started, how to recognize "buy" and "sell" signals, and how to select the most effective box size and reversal criterion.

MOVING AVERAGES

Moving averages are among the oldest trading tools. The purpose of the moving average is to smooth out short-term ups and downs in prices, to reveal the underlying trend. Use of a moving average has been likened to turning down the treble on your high-fidelity sound system, to suppress the higher-frequency cycles.

To take an example, assume that the closing prices for copper futures over the past 3 days were 109.50, 108.70, and 107.25:

Day 1	109.50
Day 2	108.70
Day 3	107.25
	325.43 ÷ 3 = 108.50

The total is 325.45. The average price over the 3 days was 325.45 ÷ 3 = 108.50. (Actually it was 108.48, but we rounded.) The next day's close is 106.40. We add that to the bottom of the column and delete the oldest price:

	~~109.50~~
Day 2	108.70
Day 3	107.25
Day 4	106.40
	322.35 ÷ 3 = 107.45

The new total is 322.35 and the new 3-day average is 107.45. The decline in the closing price caused the moving average to fall. The 3-day average is

now moving forward in time; hence its name. The next day's close is 107.40:

	~~108.70~~
Day 3	107.25
Day 4	106.40
Day 5	107.40
	321.05 ÷ 3 = 107.00

The new total is 321.05, and the new 3-day moving average is 107.00. Here you see an important feature of moving averages demonstrated. The daily closing price went up by 100 points, while the moving average continued to decline. The moving average filtered out the rise in the closing price. It said, in effect, "If I'm going to recognize a gain, it will have to be bigger or more sustained than that."

The closing price for copper on the following day was 107.70, another daily gain:

	~~107.25~~
Day 4	106.40
Day 5	107.40
Day 6	107.70
	321.05 ÷ 3 = 107.15

On this day, the moving average increased from 107.00 to 107.15, finally recognizing that the minor price trend had reversed from down to up.

If prices on Day 6 had gone down instead of up, resuming the previous lower trend, the brief rally would never have shown up in the moving average. This is the smoothing action we mentioned. To demonstrate, substitute a price of 106.65 for 107.70 on the last day:

	~~107.25~~
Day 4	106.40
Day 5	107.40
Day 6	106.65 (substitute price)
	320.45 ÷ 3 = 106.80

If we substitute a closing price of 106.65 for 107.70 on Day 6, the moving average on Day 6 is 106.80, a decline from its Day 5 value of 107.00; the rally in the closing price on Day 5 is obscured.

Putting all the days together will give you a clearer picture:

Day	*Closing Price*	*3-Day Moving Average*
1	109.50	
2	108.70	
3	107.25	108.50
4	106.40	107.45
5	107.40	107.00
6	107.70	107.15

From Day 1 through Day 4, both the closing prices and the 3-day moving average are going down. On Day 5 an upturn in the closing prices began. However, the moving average continued to decline on Day 5, not turning up until Day 6, a lag of one day.

This lag is both the cost and the benefit of using a moving average, as it delays a decision about market direction until more data are available.

Selecting the Number of Days

Any number of days can be used to build a simple moving average. We used 3 days in our example, but there's no magic to that number. The key is the market where the moving average is to be employed.

The shorter the moving average, the more sensitive it will be to price changes. The longer the moving average, the slower it will be to respond. Early signals from a moving average run the risk of being false; late signals may give up too much of the trend. The technical trader tries to strike the optimum balance between the two.

As we saw, with the 3-day moving average, the lag between the upturn in the price and the upturn in the moving average was only 1 day. That would not provide adequate filtering action in a volatile market. Trading decisions based on turns in the moving average would cause a trader to jump in and out of the market frequently, creating not only frustration but very high commission costs. A longer moving average would reduce these so-called whipsaws.

By the same token, a long moving average in a very quiet market would not provide very satisfactory results; by the time a new trend showed up in the moving average, the price move could be over. Given these trade-offs, experienced traders generally consider the longer moving averages as more dependable.

Appendix C presents more information about moving averages. It covers linearly weighted moving averages, constructing an exponential moving average, and how moving averages are used in a trading program.

TRADING VOLUME AND OPEN INTEREST

We briefly mentioned trading volume and open interest in Chapter 2. Trading volume is the number of futures contracts that changed hands during a specific period, usually a day. Open interest is defined as the number of outstanding futures contracts, or those that have not yet been closed out by offsetting futures transactions or delivery of the actual commodity.

To help you understand the nature of open interest and how it changes, let's take an example. Suppose there were a brand-new futures market in bananas, with nobody in it yet. Mr. A, who has been a student of bananas for some time, believes banana prices are headed lower. So he sells short one futures contract. Mr. B holds the opposite opinion; he expects higher banana prices in coming weeks. He buys the futures contract from Mr. A. The buying and selling is done, of course, through their respective brokers.

Those two positions—one long and one short—together comprise one unit of open interest.

Now the banana market starts to attract attention. Mr. C buys a futures contract from Mr. D; open interest increases to 2. Mr. E buys a futures contract from Ms. F; open interest increases to 3.

Mr. G also decides to go long bananas, but something different happens this time. Instead of buying from another new player, Mr. G buys a futures contract from Mr. B, who was long and has decided that he doesn't want to be in the market any more. Mr. G takes over Mr. B's long position; he replaces Mr. B in the standings, and open interest therefore does not change.

The next buyer and seller to step up are Mr. C and Mr. D, both of whom already hold positions in the market. (Mr. C is long; Mr. D is short.) They close out their positions by reversing their original futures transactions: Mr. C sells and Mr. D buys. The market has now lost two previous players, and open interest decreases by one. (Remember, one long futures contract and one short futures contract together comprise one unit of open interest.)

From this sequence you can see that:

- ✔ Open interest increases when a new long buys from a new short.
- ✔ Open interest decreases when an old long sells to an old short.
- ✔ Open interest does not change when a new long buys from an old long or a new short sells to an old short, as the new player simply replaces the old player.

Measuring Trends

Data on trading volume and open interest can be used to evaluate the status of the current price trend. The simplest gauge is trading volume. The axiom is that the volume should "follow" the trend. If an uptrend is healthy, for example, trading volume should increase on rallies and dry up when prices set back temporarily. If these conditions do not prevail, a shadow of doubt would be cast on the current trend. The converse would be true in a bear market. Trading volume would tend to increase on declines and fall off when prices staged minor rallies.

When price, volume, and open interest rise together, the market is considered technically strong.

Open interest is a bit more complicated, but it is also a more valuable diagnostic tool. The character of open interest and its change in relation to price changes provide insight into why the market is moving. For example, suppose that during the past 2 weeks both prices and open interest had risen sharply. The price rise means that aggressive buying is coming into the market. The rise in open interest tells you that the buying is coming from new longs rather than old shorts who are closing out their positions. Why? Recall how open interest changes. If the buying were coming from departing shorts, open interest would be flat or going down. Ergo,

Thumb Rule 1 When price and open interest rise together, the market is considered to be technically strong.

A price rise accompanied by flat or falling open interest is, for the same reason, suspect. The rally is being sponsored by shorts who are buying to leave the market and will last only as long as they last. If no new factor

enters the picture in the meantime, the rally will end when the last short has bought.

> *Thumb Rule 2* *When prices rise on falling open interest, the market is considered technically weak.*

A price decline that is accompanied by falling open interest also suggests a temporary condition. Sometimes referred to as a "liquidating market," the situation implies that the selling pressure is coming mainly from existing longs and that it will subside when all the longs have sold out.

> *Thumb Rule 3* *When prices fall on declining open interest, the market is potentially buoyant.*

If prices are falling while open interest is increasing, the presumption is of a legitimate bear market. A lot of selling is going on. The rise in open interest tells us that the selling pressure is coming from aggressive new shorts, who have suddenly been drawn into the market. The lower price trend is therefore on a relatively sound technical footing.

> *Thumb Rule 4* *When prices decline on rising open interest, the market is considered to be technically weak.*

These four rules of thumb may be further distilled into two general observations:

> *When price and open interest go up or down together, the current price trend is given a vote of confidence; when prices and open interest diverge, the market may be about to change course.*

We have called these rules of thumb because they are not hard and fast. They are guidelines, to be applied in concert with other technical indicators to develop a rounded picture of the status of that particular market.

Stochastics

The word *stochastic* came originally from the Greek, where it meant "good at conjecturing." In modern market analysis, a stochastic is a mathematical oscillator that measures the relative location of the closing price in the daily trading range.

The idea behind stochastics is that horses pull in the direction the stagecoach is moving. If the market is in an established uptrend, daily closing prices tend to fall at the high end of that day's price range. In bear markets, prices tend to close at the low end of the daily trading ranges. A stochastic expresses this idea in mathematical terms. It gives meaning to the location of the current closing price by comparing it to the highest high and the lowest low in the past several days. Changes in the oscillator's value become the basis for entering or leaving a market.

Close kin of the stochastic is the *momentum* oscillator, which is used to measure the rate at which prices have been changing. The simplest and most widely known momentum oscillator is probably the Relative Strength Index (RSI), devised by J. Welles Wilder, Jr. and published in 1978 in his book, *New Concepts in Technical Trading Systems.*

The RSI begins by developing a ratio of the number of "up" days to the number of "down" days. The period Wilder studied was the past 14 trading days, but a greater or lesser number of days may be evaluated. This ratio of up to down days is then taken through several mathematical steps. The final result is an index number between 0 and 100 that stands for current market strength.

The RSI can be put to work in several ways. A high RSI value connotes a market that is "overbought" and vulnerable to a setback. A low RSI signals the converse. How high is high? A study done by Peter W. Aan ("How RSI Behaves," *Futures* magazine, January 1985) showed that the average RSI value for a market top then was 72, and the average value for an RSI bottom was 32.

A divergence between the RSI and the prices on which it is based also signals change. For example, if the RSI fails to follow the most recent price gains in a sustained bull move, the uptrend would be viewed as faltering.

Finally, some of the technical phenomena found in bar charts—for example, support and resistance levels—may also be applied effectively to charts of the RSI.

Descriptions of the calculation and use of stochastics and of Wilder's Relative Strength Index may be found in Appendix D herein and in Perry Kaufman's book, referenced at the end of this chapter.

Contrary Opinion

There are just so many futures traders. They are not easy to count, as futures commission merchants are reluctant to reveal the identity of their customers; but estimates range in the hundred thousands. By compari-

son, some 50 million investors are said to be involved in the securities markets.

If there is a finite number of futures traders, they can be exhausted. That is, it is possible that a particular futures market could literally run out of new players.

To take an example, suppose prices in a certain market have been advancing for several months. Open interest has also been increasing and now stands at a record high. Given this scenario, it is conceivable that virtually everyone who ever intended to buy one of these futures contracts has already bought. That leaves the market in a precarious balance. The bulls are fully committed, and the bears are watching. Positive news, which helped fuel the rally, now has little or no effect on prices. However, it may take only a scrap of negative sentiment to tip the scale, sending the longs packing and bringing in the short sellers.

An extended advance or decline in futures prices thus may contain the seeds of its own demise.

This philosophy goes under the name of contrary opinion and is based on the observation that markets look most bullish near their tops and most dismal just about the time they are ready to turn up again. Traders who espouse this philosophy attempt to measure the extent to which futures markets have become overloaded to one side or the other and to use these evaluations in making their trading decisions.

Informed Opinion

There are other ways to consider open interest. Suppose you learned from a reliable source that many of the large speculators in wheat had just moved from the long side of the market to the short side. You could draw conclusions from that. Large speculators are supposed to know what they're doing, and they expect lower prices. Maybe they know something you don't.

Just such changes in market sentiment are gathered from the field and published each month by the Commodity Futures Trading Commission in Washington, DC. The report is called the *Commitments of Traders Report*. It is published every other Friday and is available only by electronic means. These include the Internet. (See Chapter 17.)

The categories reported on are "commercial" (hedgers), "noncommercial" (large speculators), and "nonreportable positions" (small traders). Shown for each category are the number of long positions, short positions, and the changes since the previous report. All major futures markets are covered.

OTHER TECHNICAL TOOLS

Support and resistance levels, price chart analysis, and moving averages are the most common technical phenomena. Technicians employ other means in their effort to forecast prices.

Elliott Wave analysis seems well adapted to longer term price forecasting. Named after a man who lived in the early 1900s, the method finds a major trend complete when it has formed five waves in the main direction. Reactions along the way comprise three waves in a countertrend direction. Elliott considered the waves as "behavioral tides," found throughout nature.

Investigation has also been made into price *cycles*. Cyclical price activity is most pronounced in the seasonal agricultural commodities, but it is identifiable to some degree in virtually all futures markets.

CAVEATS

Few traders put all their technical eggs in one basket. Most use more than one indicator. When the indicators disagree violently, the technical trader stays out of the market. When the indicators concur, he can take a position with a degree of confidence. When there are only shades of difference, the trader must decide which technical indicator he trusts most and give it precedence.

An analogy to a weather forecaster is apt. The forecaster doesn't base his prediction on only one aspect. He looks at temperature, dew point, wind direction and velocity, cloud cover, and relative humidity before deciding whether it's going to rain on your picnic.

The Law of Disappearing Qualifiers also applies to conclusions arrived at through technical analysis. There is as much art as science in identifying support and resistance levels, trends, and price objectives. The technician needs to remind himself from time to time that he is dealing with mathematical probabilities, not certainties.

Not all technical phenomena behave as well as those we have shown in this chapter, which were selected to demonstrate our points. Trendlines occasionally have to be redrawn on the basis of later evidence. Prices sometimes move in fits and starts, apparently trending in one direction for a short time and then suddenly reversing course. Extended upward or downward price trends are, unfortunately, not common occurrences.

Technical analysis works best in routine markets, those that are not subject to unusual stress. The best technical forecasts can be overwhelmed by sudden changes in supply or demand. Discovery of a serious crop dis-

ease, drought, a surprise announcement of a huge foreign purchase, or an unexpectedly bullish or bearish government report are examples of events that can put technical analysis into abeyance until the news is assimilated and the market affected settles back down again.

Technical analysis deals with probabilities, not certainties.

SUGGESTED READING

"How RSI Behaves," Peter W. Aan. *Futures* magazine, January 1985.

Technical Analysis of the Futures Markets, John J. Murphy. New York Institute of Finance, New York, 1986.

Trading Applications of Japanese Candlestick Charting, Gary S. Wagner and Bradley L. Matheny. Wiley, New York, 1993.

The Complete Guide to Trading Systems, Perry J. Kaufman. Wiley, New York, 1997.

Chapter 11

Hedging Revisited

In Chapter 5 we introduced the rudiments of hedging. We said that the purpose of hedging is to reduce the risk of price changes in a cash commodity and that a traditional hedge involves a futures position that is roughly equal and opposite to the cash position held by the hedger.

Hedging is not a rote process. Risk exposure must be evaluated; it may turn out to be acceptable. The damage that an adverse move in the cash price would do must be weighed against the probability of its occurrence. The price history of the proposed hedge should be examined. Particularly in financial futures, prospective hedgers should ensure that their intended actions do not violate any regulations.

A hedge is not always benign. In all the examples given up to this point, the hedge was necessary. Prices subsequently moved against the hedger's cash position, causing losses on the cash side and offsetting gains on the futures side. It is possible for prices to move in the other direction, creating losses in the hedger's futures position and triggering margin calls. A call for more money is disquieting, even though the "loss" will be recovered when the cash asset is sold. Unless the hedger has made credit arrangements to cover them, a series of margin calls may present a serious cash flow problem.

Hedging is not a rote process.

The hedges we used as examples in Chapter 5 also worked perfectly; that is, the money lost on the cash side and the amount gained on the futures sides were identical. That rarely happens in the real world. There are several reasons that the gains and losses in a hedge may not be equal. Most important is the fact that futures prices and cash prices may not change by the same amount because the two prices are subject to different influences. Cash prices respond to the supply and demand for the actual commodity. Futures prices are influenced strongly by traders' expectations.

Basis is defined as the difference between the cash price and the futures price of a commodity. It can be either a positive or negative value and is best thought of as the cash price minus the futures price.

What follows is the bond dealer example from Chapter 5, but with a difference. To make it more realistic, we have changed the T-bond futures price in the closing transaction from 104-28 to 104-31:

Short Hedge in T-Bond Futures

Cash Market			*Futures Market*	
Buy cash bonds at	105-07	Now	Sell T-bond futures at	105-17
Sell cash bonds at	104-18	Later	Buy T-bond futures at	104-31
Loss	0-21		Gain	0-18

Net result = loss of 0-03

Now the hedge does not balance. The dealer lost $^{21}/_{32}$ on his cash bonds while he held them, but the hedge earned back only $^{18}/_{32}$. Three thirty-seconds of the loss taken on the cash side were not offset.

To understand what happened, it is necessary to meet another new concept, that of *basis*. Basis is defined as the difference between the cash price and the futures price of a commodity. Basis can be either a positive

or negative value and is best thought of as the cash price minus the futures price. A change in the basis while the hedge is on is one of the reasons why hedges may not work 100 percent.

Let's take a look at the basis in the hedge just given:

Cash Market			*Futures Market*		*Basis*
Buy cash bonds at	105-07	Now	Sell short T-bond futures at	105-17	–0-10
Sell cash bonds at	104-18	Later	Buy T-bond futures at	104-31	–0-13
Loss	0-21		Gain	0-18	–0-03

Net result = loss of 0-03

The basis in the opening transaction was minus 10 (105-07 minus 105-17). In the closing transaction, the basis was minus 13 (104-18 minus 104-31), or $^{3}/_{32}$ less. It is not a coincidence that the basis change and the loss in the hedge are the same amount, $^{3}/_{32}$. The change in the basis is what caused the loss.

Potential losses resulting from basis changes cannot be controlled by the hedger. His hedge will protect him against changes in cash prices, but he is always vulnerable to a change in the basis. In this case, the basis fell; that is, it went from minus 10 to minus 13, which is a decrease. If the basis had increased, the hedger would have had the pleasant experience of earning more from his futures position than he lost on the cash bonds.

When a hedger is short futures, increases in the basis would create windfall gains. If a hedger is long futures, the situation is reversed: A decrease in basis creates gains.

When a hedger is short futures (as the bond dealer was in this example), *any decrease in the basis will cause losses; increases in the basis would create windfall gains. If a hedger is long futures, the situation is reversed: Increase in basis causes losses, and a decrease in basis creates gains.*

A hedger is not entirely helpless when it comes to dealing with the basis. In some markets, particularly the agricultural markets, basis itself has seasonal tendencies, trending higher during certain times of the year

and lower during others. A sophisticated hedger will be aware of the trends in the basis and will try to place his hedge during a period when the basis is most likely to move favorably for him.

Here's another example from Chapter 5 with the outcome changed:

Long Hedge in Corn Futures

Cash Market		*Futures Market*
Cash corn at $2.85/bushel	Now	Buy corn futures at $2.96/bushel
Buy cash corn at $3.10/bushel	3 months later	Sell corn futures at $3.25/bushel
Loss $.25/bushel		Gain $.29/bushel

Net result = +$.04

The corn exporter was long futures. The basis on the opening transaction was $2.85 – $2.96 = –11. The basis in the closing transaction was $3.10 – $3.25 = –15. Recall that when a hedger is long futures, a decrease in the basis creates gains; the basis fell from –11 to –15 while the hedge was in place, providing the hedger with a windfall gain of 4 cents per bushel on his corn sale.

Solving Hedging Problems

If you are ever called on to solve hedging problems in a correspondence course or examination, knowledge of the basis provides a way to verify your answers. The rule is:

If there is a difference between the cash price when the hedge is placed and the effective cash price received by the hedger when the hedge is removed, the basis must have changed by the same amount.

For an example, let's take another look at the very first hedge we considered:

Short Hedge in T-Bond Futures

Cash Market			*Futures Market*	
Buy cash bonds at	105-07	Now	Sell T-bond futures at	105-17
Sell cash bonds at	104-18	Later	Buy T-bond futures at	104-28
Loss	0-21		Gain	0-21

Net gain or loss = 0

The bond dealer received 104-18 in the cash market and made 0-21 profit from his short futures position. Those two numbers total to 105-07, the effective price he got for the bonds. That is the same as the cash price for the bonds when he put the hedge on, which means that the basis should not have changed.

The main reason why a hedge may not provide 100 percent price protection is that cash prices and futures prices do not always change by equal amounts.

To verify, we compare the opening and closing bases. The opening basis was 105-07 – 105-17 = –0-10. The closing basis was 104-18 – 104-28 = –0-10, the same. If the question asks for the dealer's effective price when he sold the bonds, 105-07 is proven the correct answer.

In the more recent example, the bond dealer received an effective price of 104-18 (cash) plus 0-18 (gain in the futures position) = 105-04. That's 0-03 less than the cash price when he placed the hedge, so the basis must have moved 0-03 against him.

Let's check it. The opening basis was 105-07 – 105-17 = –0-10. The closing basis was 104-18 – 104-31 = –0-13. The basis decreased by 0-03. Because the hedger was short futures, the decrease in basis created a loss. The loss and the change in basis are equal, so the answer of an effective price of 105-04 is correct.

Other Reasons for an Imperfect Hedge

A change in the basis is not the only reason that a hedge could fail to provide 100 percent protection against cash price changes. Futures contracts are not divisible. A cash position of $470,000 in Treasury notes, for example, cannot be offset exactly, because the T-note futures contract on the Chicago Board of Trade is based on $100,000 per value in T-notes. Five T-note futures contracts ($500,000) would be too much hedge; four futures contracts ($400,000) would leave $70,000 worth of cash T-notes exposed.

When faced with this dilemma, bear in mind that any part of an intended futures hedge that does not have an offsetting cash position is a speculation and carries with it speculative risk. The more conservative

business decision in this example would be to underhedge the cash position; that is, to protect as much of it as possible without creating any speculative exposure.

Overhedging a cash position in such circumstances requires a favorable price forecast. In the previous example, overhedging would not even be considered if interest rates are expected to move lower, as the "extra" short futures position would be expected to generate market losses. (Remember: Prices of fixed-income financial instruments go up when interest rates go down.) If interest rates are expected to rise while the hedge is on, overhedging could be considered by an experienced trader.

An example will help you understand how an unbalanced hedge works. Assume you are a cattle feeder. It is March, and you have 62 steers out in the feedlot munching corn. They weigh about 800 pounds each now, and you are going to feed them up to about 1000 pounds each. That should take about 7 weeks, at which time you'll market the steers.

The present cash price for fat cattle is 62.50 cents per pound. June cattle futures are trading at 62.90 cents per pound. You want to hedge your cattle. The live cattle futures contract on the Chicago Mercantile Exchange is based on a contract size of 40,000 pounds, or about 40 steers weighing 1000 pounds each. You will have about 62,000 pounds of cattle at market time. Your hedge will have to be unbalanced.

Cattle prices are forecast to ease during the time your hedge will be in place, so you decide to take the speculative risk and overhedge your cash position. You sell short two contracts of June cattle. Your assessment of the market proves to be right; when it comes time to market your cattle, prices have declined a little over 1½ cents. The results of your hedge would look something like this (no change in basis):

Cash Cattle			*Futures*	
	62.50	March	Sold two June cattle at	62.90
Sold 62 head at	60.72	May	Bought two June cattle at	61.12
	−1.78			+1.78

The cash price and the futures price have changed by the same amount, so it appears at first glance that you received an effective price of (60.72 cash price +1.78 futures gain =) 62.50 cents a pound for your cattle. However, that's not so, because the underlying assets were different sizes. There were only 62,000 pounds of cash cattle; there were (40,000 × 2 =) 80,000 pounds of cattle futures.

To calculate the price per pound you received for your cattle, you have to figure out your total receipts and divide that number by 62,000

pounds. You were paid $37,646.40 for your cash steers (60.72 cents per pound × 1000 pounds × 62 head). Your short futures hedge of two contracts returned you 1.78 cents per pound times 80,000 pounds, or $1424.00.

The total amount you received for your cash cattle was therefore ($37,646.40 + $1,424.00 =) $39,070.40. That total divided by 62,000 pounds of live cattle equals 63.02 cents per pound.

Because prices moved in a favorable direction (in this case, down) the unbalanced hedge increased the effective price you received for your cattle from 62.50 to 63.02. If prices had instead increased, the unbalanced hedge would have reduced your effective price; you would have lost more on the short futures side than you gained on the cash side.

Another possible reason for an imperfect hedge is a difference between the futures and the cash crop. In some commodities, particularly the agricultural ones, the cash commodity being hedged may not be identical to the commodity underlying the futures contract. The coffee futures contract on the Coffee, Sugar & Cocoa Exchange, for example, is based on Colombian coffee. There are many other varieties. A grower or processor who uses New York futures to hedge another kind of coffee may encounter unexpected gains or losses because the price of his coffee and the price of Colombian coffee diverged.

Selecting the Delivery Month

In most hedging situations, there will be more than one futures delivery month that could be used for the hedge. The first requirement is that the delivery month be beyond the date when the hedge is to be lifted. Unless you have reason to do so, there's no point in having to close out one expiring futures position and open another to keep your hedge intact.

It is also usually desirable to use the nearest futures contract that meets the first requirement. The closer the futures contract is to maturity, the more responsive it will be to changes in the cash price, and the lower will be the risk of changes in the basis. Nearby futures contracts are also generally more liquid; there is more trading activity in them than in the distant contracts. As a result, your orders to buy or sell will be filled quickly and with minimal impact on the price level.

Experienced hedgers look at other criteria when selecting the futures delivery month they will use. Some delivery months have a history of gaining ground on other delivery months at certain times of the year. One delivery month may offer a better "opening" basis than another, setting the stage for a possible planned basis gain.

Margins in Hedges

The amount and nature of initial and maintenance margins required of a hedger depend on the exchange, the futures commission merchant (FCM), and the customer. An unknown, thinly capitalized hedger could be required by the FCM to post margins greater than exchange minimums, and in cash. An old, well-heeled customer of the FCM may be able to satisfy both original and any maintenance requirements with a letter of credit issued through a local bank.

The point to be made here is that an established futures hedge may make considerable further demands on short-term capital. To take an example, let's assume that you have a short hedge in soybean futures. The original margin is $2500, the maintenance level is $2000, and you are on a cash basis with your FCM. You will be called for additional margin if beans go up more than 10 cents from your entry level, as your equity would drop below $2000. For every dollar that bean prices rise, the additional margin required to maintain your short hedge would be $5000. That's for one contract of 5000 bushels. If your hedge is for 50,000 bushels, each dollar gain in soybean prices would create a margin call for $50,000. Granted, you get the money back when you sell your beans at the new higher cash price. But in the meantime you have to come up with the necessary short-term financing for the hedge.

NONREGULAR HEDGES

There are bona fide hedges that do not fit the patterns we have been discussing. We don't want to dwell on these nonstandard hedges, but we think you should at least be introduced to them. They are cross-hedges, ratio hedges, and on-call transactions.

Cross-Hedges

If no futures market exists for a certain commodity, it is sometimes possible to use a related futures market for hedging. These are referred to as cross-hedges and are recognized by the Commodity Futures Trading Commission as legitimate. The key is that the two commodities be economically related, so their prices will tend to move up and down together.

A classic example of a cross-hedge is palm oil/soybean oil. Palm oil is one of the major edible oils in the world; it has no futures market. Soybean oil, the most important edible oil, has a very active futures market. The

positive correlation between the price movements in the two markets is well above 90 percent. Soybean oil futures can therefore be used effectively to hedge cash positions in palm oil.

Cross-hedging is common in interest rate futures. Commercial paper and CDs can be hedged in T-bill futures. High-quality corporate bonds can be hedged with T-bond futures. The key, once again, is the basis: the relationship between changes in the cash price and changes in the futures price. If history has shown that the two prices tend to move together, a cross-hedge is feasible.

Ratio Hedges

When you hedge soybean risk in soybean futures, there is little question of how the futures price will respond to a change in the cash price. Cash soybeans and the soybeans underlying the futures contract are identical. Their price volatility is virtually the same. As a consequence, there is no need for the value of the futures contracts used in the hedge to differ from the amount of exposure. Or, to put it another way, a hedge ratio of 1 to 1 is generally effective: $1 worth of futures for every $1 worth of cash exposure.

If the price of the product hedged and the futures price do not have the same volatility, a ratio hedge may be more efficient.

If the price of the product being hedged and the futures price march to different drummers, the most efficient hedge may be an unbalanced hedge. For example, assume that the price volatility of commercial paper is 1.2 times the price volatility of T-bills. If T-bill futures are used to cross-hedge a cash position in commercial paper, the best combination may not be 1 to 1: it might be something like 1.2 to 1, or $1,000,000 worth of T-bill futures for each $833,333 worth of commercial paper. Then if the market value of the more volatile commercial paper changes by .60, T-bill futures prices should change by .50, equating the change in the value of the two holdings ($.60 \times 833{,}333 = .50 \times 1{,}000{,}000$) and enhancing the probability that losses on the cash side will be recouped by gains in the futures.

On-Call Transactions

Cotton was king in New Orleans at the turn of the century. A practice developed there that capitalized on the fact that a favorable movement in the basis virtually guarantees profits in a fully hedged cash position.

For example, suppose a cotton dealer buys 1000 bales of combed cotton from a local grower and stores them in his warehouse. The dealer does not have an immediate buyer for the cotton, so at the same time he sells short two contracts of December cotton futures on the New York Cotton Exchange (each futures contract is 500 bales; each bale is 100 pounds).

At this point, his balance sheet might look something like this:

Cash	*Futures*	*Basis*
Bought 1,000 bales at 71.27	Sold 2 contracts December cotton at 72.77	Minus 1.50

A week later a buyer phones the cotton dealer. The buyer wants to purchase 1000 bales of cash cotton. During their conversation, the buyer indicates that he believes cotton prices will soften over the next several days. He asks the dealer for his best offer.

The dealer reviews his status. He is "long" the basis (short futures), so every penny that the basis increases will earn him $1000 in revenue (1 cent per bale × 100 pounds × 1000 bales). The dealer would be satisfied with a $1000 gross profit on the transaction. But he doesn't tell the buyer that the price for the cash cotton is 72.27 (1 cent more than the dealer paid). He tells the buyer that if he buys the cotton now, he can pay for it at any time he chooses over the next 10 days at an effective price of December futures minus .50.

The dealer has forced the basis to move in a favorable direction. Whether cash cotton prices go up or down in the interim, the dealer will earn his $1000 profit. He has also give the buyer the opportunity to exercise his market judgment and, if he is correct, to buy the cash cotton at a better price.

To prove it, we'll continue with our example. Suppose the buyer were right on the market forecast; cash cotton fell to 67.44 cents per pound over the next week, and December futures kept exact pace by dropping to 68.94. At that point the buyer elected to pay for the cotton, giving the dealer the agreed cash price of 50 points "off" December futures, or (68.94 − .50 =) 68.44 cents per pound. The dealer closed out his short hedge at that time.

Here's how the dealer fared:

Cash		*Futures*		*Basis*	
Bought 1000		Sold 2 contracts			
bales at	71.27	December cotton at	72.77	Minus	1.50
Sold 1000		Bought 2 contracts			
bales at	68.44	December cotton at	68.94	Minus	.50
	−2.83		+3.83		+1.00

The dealer received 68.44 cents per pound from the buyer. He also received 3.83 cents per pound from his profitable short futures position. The effective selling price for his cotton was therefore (68.44 + 3.83 =) 72.27 cents per pound. This is 1 cent per pound more than he paid for the cash cotton, so he has in fact received his desired gross profit of $1000 on the transaction. The buyer is also pleased. By waiting a week or so, he saved almost 3 cents a pound on his purchase of cash cotton.

But note this important point in an on-call purchase:

The buyer is at price risk; the dealer is not.

If cash cotton prices had risen sharply in the interim, the buyer would have had to pay the higher price; the dealer would still make his $1000 profit. Here are the numbers:

Cash		*Futures*		*Basis*	
Bought 1000		Sold 2 contracts			
bales at	71.27	December cotton at	72.77	Minus	1.50
Sold 1000		Bought 2 contracts			
bales at	74.36	December cotton at	74.86	Minus	.50
	+3.09		−2.09		+1.00

The dealer received an effective price of (74.36 – 2.09) = 72.27 cents per pound for his cotton, as before. However, the buyer, because he waited, had to pay 74.36 cents per pound for the cash cotton, which is more than 2 cents a pound higher than the cash price when he first phoned the cotton dealer.

This transaction is referred to as an "on-call" transaction. In this case, the payment awaited the buyer's call. The same general approach can be

used for transactions based on a seller's call. On-call transactions are not widely used today, although they may still be used in the cotton market, and to some extent in the futures markets for sugar and U.S. Treasury bonds.

SUGGESTED READING

Futures and Options Course. Futures Industry Association, Washington, DC, 1995.

Chapter 12

The Financial Futures

Before financial futures were introduced in the 1970s, futures markets dealt with consumable commodities like the grains, meats, and metals. These traditional futures markets are similar in many respects and therefore lend themselves well to a general discussion.

Financial futures markets do not fit the same mold. The assets underlying these new futures are not always tangible. The commodities may not be consumed at all but simply change form or ownership. In some cases, physical delivery is impracticable, so settlement is by cash only.

Financial futures not only differ from the traditional commodities, they differ among themselves. Financial futures fall into three broad categories:

Foreign currency futures

Stock index futures

Interest rate futures

We will look at each category, presenting the basic information you need to understand how each market works. Detailed information on individual financial contracts may be found, as for other commodities, in the briefing sheets in Chapter 16.

FOREIGN CURRENCIES

Exchange rates for the major foreign currencies have fluctuated widely in recent years. But this has not always been the case. From 1944 to 1971, member nations to the Bretton Woods agreement—which included most major world trading partners—pegged their currencies to a specified number of U.S. dollars or given amount of gold (at $35 per ounce). Exchange-rate fluctuations during those years rarely exceeded 2 percent.

This stability was threatened by massive U.S. spending in the late 1960s to support the Vietnam War and fuel expansionary fiscal policies at home. By 1971, the number of dollars in circulation was greater than the total U.S. gold reserves, and President Nixon announced that the U.S. dollar would no longer be convertible into gold. The action removed the basis for parity between currencies. Since 1973, European central banks have allowed their currencies to seek their own levels, and the resulting movement in exchanges rates has been dramatic. It is not unusual for a currency's value to vary as much as 20 percent within a year, and a swing of 25 percent has been recorded in a 3-month period. Such volatility has added a new dimension of risk to international business.

Using Foreign Currencies

If you are going to buy a product from someone who will accept only a certain foreign currency in payment, you are first going to have to buy that foreign currency. Its exchange rate will have a direct effect on the cost of the product to you.

For example, suppose you ordered a Swiss watch direct from the manufacturer in Zurich. The price is 750 Swiss francs (SF). The following table shows what the watch could cost you in U.S. dollars, depending on the exchange rate for the Swiss franc at the time of your purchase:

Price of Watch	*Exchange Rate*	*Cross Rate*	*Cost of Watch in U.S. Dollars*
750 SF	.55	1.818	(750 × .55) = $412.50
750 SF	.60	1.666	(750 × .60) = $450.00
750 SF	.65	1.538	(750 × .65) = $487.50
750 SF	.70	1.428	(750 × .70) = $525.00

The "Exchange Rate" column in the table shows the value of one Swiss franc in U.S. currency, which is the way all foreign currency futures prices are expressed. International banks use a cross-rate, which is the amount of the foreign currency you can buy for one U.S. dollar. The cross-rate is the inverse of the futures price.

(We've taken a liberty with the notation, abbreviating 750 Swiss francs as 750 SF instead of SF 750. The notation is uniform throughout the book.)

Example: You buy a small cottage on one-half acre in the south of France. The price is 300,000 French francs (FF). The exchange rate at that time is .16, so each franc costs you 16 cents. Your cost for the house is therefore (300,000 FF × .16 =) $48,000.

Six months later you decide it was a bad idea and put the house on the market for 330,000 francs, which is 30,000 francs more than you paid for it. You are pleasantly surprised when it sells right away, and figure you have recovered nicely from an errant decision. When you go to the bank to convert your draft for French francs into dollars, however, you discover that the exchange rate for the franc has slipped to .14. You receive only 14 cents for each franc, or a total of $46,200 (330,000 FF × .14). A change in the exchange rate turned an apparent profit into a loss.

Example: Your U.S. firm makes a product that sells like potato hotcakes in Germany. You are paid for your product in deutsche marks (DM). Before you can put that income on your company books, you have to convert the deutsche marks into U.S. dollars.

Your projected German sales for the first quarter of next year are 2.5 million DM. That includes a profit of 125,000 DM. The DM will be wire-transferred from Germany to your correspondent bank in New York City, where they will be converted into U.S. dollars and placed in your account. The current exchange rate for the DM is .60, so your expected first-quarter receipts are $1.5 million (.60 × 2.5 million DM) and your expected profit is $75,000 (.60 × 125,000 DM).

But something unexpected happens. The value of the deutsche mark begins to decline. The following table shows how your returns would be affected:

DM Received	*Exchange Rate*	*Effective Receipts*
2.5 million	.60	$1,500,000
2.5 million	.59	$1,475,000
2.5 million	.58	$1,450,000
2.5 million	.57	$1,425,000

If the exchange rate were to fall to .57, your total receipts would be $75,000 less than you had anticipated. That was your original expected profit, and it would now be completely erased.

Futures Markets

It was against the backdrop of freewheeling exchange rates that trading in foreign currency futures began at the International Monetary Market in Chicago in 1973. The original list included nine currencies, some of which you have already met:

British pound	Dutch guilder
Japanese yen	**Mexican peso**
Swiss franc	French franc
Deutsche mark	Italian lira
Canadian dollar	

The foreign currency futures contracts that are actively traded today are the ones in boldface type, plus the Australian dollar, which was added later.

Futures contracts are also traded on the U.S. Dollar Index, which represents a basket of the foreign currencies of 10 major world trading partners of the United States. The index is a weighted average of the dollar value of those foreign currencies. Its relationship with the dollar is inverse; that is, when the value of the foreign currencies rises, the index declines. Like all index futures, the U.S. Dollar Index is a broad-based measure. It is not designed for hedging exchange-rate risk in a single currency. However, it may be used effectively by international firms or investors with exchange risks in several different major foreign currencies. Settlement of U.S. Dollar Index futures contracts is by cash only.

Risk

Not long ago, CISCO, a futures research firm in Chicago, surveyed some 200 of the largest nonfinancial companies in the Chicago area to inquire (1) whether the company had foreign exchange risk; (2) if so, whether the risk was being hedged; and (3) if so, how. Three-fourths of the companies with exchange rate risk indicated that they hedged their exposure. Most of the hedgers were conservative in their approach, aiming to minimize

foreign exchange losses or just break even. Companies with large foreign exchange exposure were twice as likely to hedge as smaller companies. Bank forward contracts were the hedging vehicles most commonly used.

Forward contracting in foreign currencies is a natural outgrowth of the relationship between a multinational bank and its commercial customer. The customer depends on the bank for a variety of services and information, including information on exchange rates. It is a logical step from buying foreign currency for delivery today to buying the same foreign currency for delivery at a later time.

As we pointed out in an earlier chapter, the forward contract offers certain relative advantages over a futures contract. The forward contract may be for any amount, of any currency, for delivery at any time. There is no explicit cash margin required, although banks may ask for compensating balances or other collateral. Futures offer other benefits. Banks generally consider $1 million as the basic unit for forward contracting. This may be more money than a small company needs. The value of most individual foreign currency futures contracts falls in the $80,000 to $100,000 range. Another major benefit of the futures contract is its flexibility. A futures position can be reduced or abandoned altogether without incurring additional transaction costs. Finally, futures may offer considerably lower transaction costs, particularly if your business is not located in one of the major financial centers.

Hedging

Foreign currency futures are the financial futures most like the traditional futures markets. Settlement of the futures contract can be made by either futures market offset or physical delivery of the actual foreign currency. Hedging is straightforward; the holder of a foreign currency bank balance would use a short futures hedge to protect against a decline in its value. An international businessman who would suffer losses if the value of a foreign currency were to rise relative to his own would use a long hedge in the foreign currency future.

Settlement of the foreign currency futures contract can be made either by futures market offset or by physical delivery of the actual foreign currency.

An example will make this clearer. Let's say that Barbara Bradford, Inc., an American firm, imports designer buttons from Switzerland. The Bradford company buys in large quantities and resells the buttons to U.S. manufacturers of high-fashion clothes for women. The buttons are priced in Swiss francs when they are ordered. Because many of the buttons are specially made, there is often a considerable lapse of time between order and payment. Bradford has noticed that on some delayed orders, a large part of her expected profit has been lost to changes in the exchange rate.

She has just ordered 125,000 Swiss francs worth of buttons. The exchange rate for the Swiss franc at the time is .70, so she expects the buttons to cost her (125,000 francs × .70 =) $87,500. She has based resale prices to her customers on that cost. To protect herself against an increase in the price of the Swiss franc in the interim, she buys one contract of Swiss franc futures (contract size = 125,000 Swiss francs).

Six weeks later the buttons are received, and Bradford buys 125,000 Swiss francs in the cash market to pay for them. At the same time she sells her futures position. She notes with satisfaction that the hedge did its job; although the price of the Swiss franc has risen to .7324, her effective exchange rate is still .70, and her effective cost for the buttons is $87,500.

The complete hedge transaction:

Long Hedge in Swiss Franc Futures

Cash Exchange Rate		*Futures*
.7000	Now	Buys 1 SF at .7015
.7324	6 weeks later	Sells 1 SF at .7339
Opportunity loss =.0324		Gain =.0324

Bradford actually pays 73.24 cents for each cash Swiss franc. But the gain of 3.24 cents from the long futures position fully offsets the added cost on the cash side, reducing her effective price to 70 cents per Swiss franc, which is what she expected to pay.

If she had not taken the hedge, there would have been no offset, and the cash francs would have cost her $91,550 (125,000 × .7324). This would have been $4050 more than she had anticipated; to look at it in a different light, she would have seen her profit in the transaction shrink by $4050.

Here is another example, with a bit more to it. Your U.S. firm has just acquired a small optics manufacturing company in Germany. The purchase price is 4 million deutsche marks in cash. At the time of your negotiations, we'll say that the exchange rate for the DM is .50. That makes the

purchase price $2 million U.S. (4 million DM × .50), which is acceptable to your board of directors. For tax reasons, the seller would like to be paid in four quarterly installments of 1 million DM each. You agree to that. You make the first payment on March 1. The exchange rate for the DM at that time is still .50, so the first installment costs you the expected $500,000.

However, on June 1 the exchange rate for the DM has climbed to .54; that installment therefore costs you (1,000,000 DM × .54 =) $540,000. On September 1 the exchange rate has risen further to .59; that installment costs you (1,000,000 DM × .59 =) $590,000. The December 1 installment is $610,000, reflecting an exchange rate of .61 at the time.

In December you total up what you have paid:

March 1 payment	$ 500,000
June 1 payment	540,000
September 1 payment	590,000
December 1 payment	610,000
	$2,240,000

Your total cost for the company is not $2 million but $2.24 million. The difference of $240,000 is attributable entirely to changes in the exchange rate. Paying 12 percent more than you had expected for the company is an unpleasant surprise for you—and perhaps for your board of directors as well.

The most conservative way to control this exchange rate risk is to make a forward contract with your bank calling for the delivery of 1 million DM to you at an agreed rate on each payment date. Futures markets may also be used. In this case, you would want a long hedge in deutsche mark futures. Let's work it out.

The first question is: How many futures contracts are needed? To find the answer, we divide the total amount to be hedged (3 million DM) by the futures contract size (125,000 DM). That equals 24 futures contracts.

The next question is: In which futures delivery month do you place your hedge? You could buy 24 distant contracts and sell them next December after the last quarterly payment was made. But that's not advisable. Basis risk would be greater in the distant contracts. Furthermore, your exchange-rate exposure is not constant during the period. It goes down every time you make a cash payment. The growing number of futures contracts that have no countervailing cash position would be purely speculative. There must be a better way.

You notice that the payment schedule has the same periodicity as the futures market. If you buy eight DM futures contracts in each of the

June, September, and December maturity months, your foreign currency risk would be fully hedged; just as important, the size of the hedge would be automatically reduced by the proper amount (1 million DM) each time a cash installment is paid and the matching futures position is closed out.

The easiest way to see the results is to treat the transaction as three separate hedges, each covering 1 million DM. The first increment would look something like this:

Long Hedge in Deutsche Mark Futures

Cash Exchange Rate		*Futures*	
.5000	March	Buy 8 June DM at	.5015
.5400	June 1	Sell 8 June DM at	.5415
Opportunity loss = .0400		Gain =	.0400

Delivery is not taken against the long futures position; it is closed out with an offsetting futures market transaction. One million cash deutsche marks are bought for your account in New York and transferred to the account of the seller in Germany. You pay the going rate of 54 cents for each DM. However, barring any changes in basis (and excluding transaction costs), the opportunity loss of 400 points on the cash side is fully offset by the gain of 400 points in the long futures position. The *effective* exchange rate is therefore .50, and the cost of the deutsche marks to make the June payments is the expected $500,000 (1 million DM × .50).

Closing out the eight June futures contracts also reduces the hedge coverage to 2 million DM (16 contracts × 125,000 DM), which is equal to the remaining amount to be paid, so the outstanding cash obligation is not "overhedged."

The next increment is paid on September 1:

Cash Exchange Rate		*Futures*	
.5000	March	Buy 8 September DM at	.5023
.5900	September 1	Sell 8 September DM at	.5923
Opportunity loss = .0900		Gain =	.0900

Once again, the opportunity loss on the cash side is offset by the gain on the futures side; the *effective* exchange rate is still .50, and the cost of the deutsche marks to make the September 1 payment is the expected $500,000.

After these transactions the amount owed is 1 million DM, and the remaining hedge comprises eight December futures contracts of 125,000 DM each, so the cash and futures sides are still in balance.

The final installment is:

Cash Exchange Rate		*Futures*	
.5000	March	Buy 8 December DM at	.5034
.6100	December 1	Sell 8 December DM at	.6134
Opportunity loss = .1100			Gain = .1100

With these transactions, the payments are finished and the futures positions are completely closed out. Even though the exchange rate moved sharply against the buyer (you) in the interim, because of the hedge, you paid $2 million U.S. for the German optics company—no more, no less.

In order to protect against *adverse* movement in the cash price, a futures hedge will also negate any windfall gains that would come from a *favorable* movement in the cash price.

If the DM had weakened during the period instead of going up in value, you would still have paid $2 million. Remember what we said earlier: In order to protect against *adverse* movement in the cash price, a futures hedge will also negate any windfall gains that would come from a *favorable* movement in the cash price.

Short Hedge

The Johnston Company sells personal computers to the British government. It has just received an order for 200 units to be delivered in London in 6 months. The British government has agreed to pay a total of 250,000 British pounds (1250 pounds per unit) on receipt. At the current pound exchange rate of 1.74, that's equal to $2175 U.S. for each computer, an acceptable price to the Johnston people.

The Johnston Company cannot put British pounds on its books. It has to exchange them for U.S. dollars. This places the company at ex-

change-rate risk. If the value of the British pound were to decline before the computers were shipped and paid for, the effective sales price received by the Johnston Company would be less.

The company decides to hedge the exchange-rate risk. It does so by selling short British pound futures. The amount to be hedged is 250,000 pounds. This is four times the futures contract size of 62,500 pounds, so four futures contracts are sold at $1.78. Six months later, when the computers are shipped, the cash pound has fallen to 1.68; however, as shown in the following, the Johnston Company still receives an effective price of $2175 per computer:

Short Hedge in British Pound Futures

Cash Exchange Rate		*Futures*	
$1.74	Now	Sold at	$1.78
1.68	6 months later	Bought at	1.72
Opportunity loss = $ .06		Gain = $ .06	

Each British pound the Johnston Company receives on delivery of the computers can be exchanged in the cash market for $1.68. The 6 cents per pound profit on the short futures position is added to that, making an effective total of $1.74 that the Johnston Company received for each pound. The price in U.S. dollars that the company received for each computer is calculated by multiplying $1.74 times 250,000 pounds and dividing the answer by 200. That equals $2175.

What happens if the value of the British pound goes up? Will the Johnston Company reap a windfall gain? The answer is no. The hedge will block any windfall profits because the loss on the short futures position will offset the potential gain in the cash market, as shown in the following:

Short Hedge in British Pound Futures

Cash Exchange Rate		*Futures*	
$1.74	Now	Sold at	$1.78
1.82	6 months later	Bought at	1.86
Apparent windfall gain = $ .08		Loss = $ .08	

The value of the British pound has risen by 8 cents. But so has the futures price. When you add up the gain in the pound and the loss on the short futures position, you find that they offset; the Johnston Company still receives $1.74 for each pound and $2175 for each computer, as it had planned.

In this case, if the Johnston Company had not put on the short hedge, it would have had no futures losses. Each pound it received would have bought $1.82 instead of $1.74, and its effective price for each computer would have been $2275 ($1.82 × 250,000 ÷ 200). That's $20,000 in additional profits, or a 4½ percent bonus. Does that mean the hedge was a bad idea? Absolutely not. That's hindsight, which is always 20/20 vision. To complain about a hedge after the fact is tantamount to begrudging your term life insurance last year because you didn't die. The hedge did its job. The cash price of $2175 for each computer was protected.

Dynamic hedging requires a price forecast, in order that the hedge may be held in abeyance during periods when favorable cash price movement is expected.

Dynamic Hedging

The hedging strategies discussed before are static. The hedges are put in place and left there until they are no longer needed. Their goals are to minimize losses or just to break even against exchange-rate movement. Futures allow the hedger to manage risk. This can be demonstrated by modifying the first example.

Let's assume that you pay the first cash installment of 1 million DM on March 1, as before, at a cost of $500,000. However, before making any decisions about how and when to hedge the balance, you ask your economic research staff for a briefing on the deutsche mark. In their judgment, the DM is in a downtrend and is expected to move lower over the next few months. They recommend that you leave your short cash position in DM unhedged.

At this point, you have to decide whether you are in the business of forecasting foreign currency exchange rates or manufacturing optics. If you defer your hedge, your entire remaining commitment in cash DMs is exposed to adverse movement in the exchange rate.

To continue with the example, you decide that the foreign-exchange risk is acceptable. You put the hedge on hold and tell your staff to notify you immediately if there are any changes in the situation. On June 1, when the next cash installment of 1 million DM is due, the market estimate is

proven correct; the exchange rate has slipped to .46. The June payment therefore costs you only $460,000 (.46 × 1 million DM).

Then, on June 4, three days later, your research people advise you that downward momentum in the DM appears to be subsiding. They expect the Germany currency to firm over the near term and recommend that you hedge your remaining exposure of 2 million DM in the futures markets. You take their advice and buy eight contracts of September DM futures and eight contracts of December DM futures.

It turns out that your research staff were again correct. On September 1, when the next payment falls due, the exchange rate has inched back up to .47. You buy 1 million cash DM and close out the September futures, as follows:

Cash Exchange Rate		*Futures*	
.4600	June 4	Buy 8 September DM at	.4623
.4700	September 1	Sell 8 September DM at	.4723
Opportunity loss = .0100			Gain = .0100

Because of the hedge, the cash DMs cost you the same as they did in June, or (.46 × 1 million DM =) $460,000.

One week later the seller calls you from Munich. He is badly in need of cash and wonders if you would be willing to make the final December payment immediately. In the interest of goodwill, you accommodate him. The exchange rate is still .47 the next day when you buy the cash DMs and close out your December futures position:

Cash Exchange Rate		*Futures*	
.4600	June 4	Buy 8 December DM at	.4634
.4700	September 9	Sell 8 December DM at	.4734
Opportunity loss = .0100			Gain = .0100

Thanks again to the hedge, the effective exchange rate is still .46, and the final payment also costs you $460,000 (.46 × 1 million DM).

To sum up:

March 1 payment	$ 500,000
June 1 payment	460,000
September 1 payment	460,000
September 9 payment	460,000
	$1,880,000

The total cost of your acquisition is $1,880,000. That's $120,000 less than you had expected to pay. This windfall gain is attributable to the delay in putting on the hedge while prices (the exchange rate) held the promise of moving favorably. Your long futures position provided protection against the subsequent adverse move in the exchange rate, and it allowed you the flexibility of closing out your hedge at any time and without penalty by making an offsetting futures market transaction.

The question that remains to be answered is whether this course of action was speculative—or, more generally, whether it is a speculation to defer any hedge while favorable movement is expected in cash prices. Speculation is usually defined in terms of a futures position that has no cash counterpart. In this case, the situation was reversed. There was no net futures position; the exposure was entirely on the cash side.

Perhaps the question should be asked of one who waited to hedge and wound up sustaining a loss that would have been entirely avoidable.

Caveat Revisited

We've said it before, and we'll say it again. To keep things simple, we have made a lot of things come out even in the examples above—hedges comprised whole numbers of futures contracts, the basis didn't change, and cash payment dates and futures delivery months coincided. This symmetry is rarely encountered in actual practice.

We also made our futures analysts omniscient. If they had been wrong, and exchange rates had moved adversely while the buyer's exposure was unhedged, there would have been market losses, and the overall cost of the acquisition could have been considerably more than the planned $2 million.

STOCK INDEXES

Futures contracts on stock indexes began trading in February 1982 on the Kansas City Board of Trade. The index underlying this ground-breaking new futures contract was the Value Line Composite Index, an unweighted average of the market prices of some 1700 stocks. This was soon followed by futures contracts on the Standard & Poor's (S&P) 500 Stock Index, the New York Stock Exchange Composite Index, and the Major Market Index.

Because of the virtual impossibility of delivering one share of each of several hundred stocks, settlement of stock index futures is made by cash only.

Before the behavior of these new futures could be observed, economists theorized they would spend most of their time at discounts to their underlying cash indexes. After all, stocks pay dividends; stock index futures do not. Gains in stock transactions may be deferred almost indefinitely; gains in futures must be marked to the market on December 31 each year and income taxes paid on any unrealized gains.

In fact, futures prices have been both above and below the prices of the corresponding cash indexes. The key has not been taxes or dividends but traders' expectations. When traders are bullish on the stock market, they buy stock index futures contracts, and futures move to a premium to the cash index. When traders expect lower stock prices, they sell stock index futures in anticipation, forcing futures to a discount to the cash index.

Many other stock index futures contracts have been introduced over the succeeding years, most with only limited acceptance by the investment community. Today, eight different futures contracts are traded on seven stock indexes. Those with the most open interest are the S&P 500, the S&P MidCap 400, the Nikkei 225 Stock Average, and the NASDAQ 100 Stock Average.

Each index represents an average value of the stocks that are included in the index and changes every time the price of any one of the stocks changes. The indexes vary in both their composition and method of calculation. A detailed description of each index may be found in the information sheets in Chapter 16.

Using Stock Index Futures

A stock index represents the broad market. Changes in the index reflect price movement in many different stocks. The index can mask the price movement of individual stocks within it. That is, it is possible for a decline in one stock to be offset by a rise in another, and the index not to move at all. Stock index futures are therefore of little value in hedging a small portfolio comprising only a few stocks because there would be no dependable

correlation between the movement of the index and the price movement in the stocks. However, stock index futures can act as an effective hedge when used to protect against price changes in a large, diverse portfolio.

Stock index futures are of little value in hedging a small portfolio because there would be no dependable correlation between the movement of the index and the price movement of the stocks.

Long Hedge

Suppose you were a successful private money manager with 50 percent of your assets invested in A-rated common stocks. You know from experience that your $100 million portfolio tracks very closely with the value of the New York Stock Exchange (NYSE) Composite Index. It is now February 1. In May you will receive $5 million in cash from a new client, and, in keeping with your asset allocation, you plan to put $2.5 million of it into equities. The problem is, you expect the stock market to rally substantially in the interim and the prices of the issues you intend to buy to be directly affected.

To hedge against this potential opportunity loss, you decide to buy stock index futures. Inasmuch as your portfolio has a high positive correlation with the NYSE Index, you use that futures contract. You choose the June maturity month because it will be more responsive to current economic forces than a more distant futures contract (and will therefore have less risk of basis change) and yet will not expire before you receive the cash.

To calculate how many futures contracts you will need, you first have to determine the value of the futures contract. This is accomplished by multiplying the futures price by $500. Let's say that June NYSE futures are trading at 348.00. Five hundred dollars times 348.00 equals $174,000. That's the present value of one June NYSE futures contract. You divide $174,000 into $2.5 million, the amount of stock to be hedged, and get 14.37 futures contracts. Because you can't buy $^{37}/_{100}$ of a futures contract, you settle for 14 contracts.

Your forecast proves to be correct. In May, when the $2.5 million in cash is in hand, the stock market is in the middle of a rally. The NYSE cash index stands at 366.70 and the June futures are 369.30. You set your stock

buying program in motion and sell your 14 June NYSE futures contracts. The results would be:

Long Hedge in NYSE Futures

Cash Index			*Futures*	
NYSE Index at	345.40	March 1	Buy 22 June NYSE at	348.00
NYSE Index at	366.70	May	Sell 22 June NYSE at	369.30
Opportunity loss =	21.30		Gain =	21.30

The cash NYSE Index rose 6 percent in the interim. Given that the prices of the stocks you intended to buy moved right along with the index, $2.5 million in cash buys 6 percent less stock in May than it would have in March. However, the hedge gives virtually all of this loss purchasing power back to you in the form of $149,100 in futures profits (21.30 × $500 × 14 contracts).

Short Hedge

Bill Thompson is the financial trustee for a major eastern university. The endowment fund he controls is $26 million, about half of which is currently invested in high-quality common stocks.

Thompson does not believe in finessing the stock market. His goal is to buy and hold top-tier securities for long-term appreciation rather than to make several small trading profits. He is, however, attuned to major market swings, and he has come to the conclusion over the past few weeks that the stock market is due for a sizable correction.

He has several choices: He can sit tight and weather the storm, if any. He could sell a portion of his stocks and put the proceeds temporarily into cash or fixed-income securities. Or he could hedge his holdings with a short position in stock index futures.

Sitting tight does not appeal to him. It leaves him vulnerable to possibly deep interim losses and would look to the world as if he either didn't see the setback coming or didn't know what to do about it. Selling off part of his stock portfolio would be disruptive and create large transaction costs; if he's wrong about the decline, he could be faced with the unsavory situation of having to buy the same stocks back at higher prices.

He knows from his research that the overall value of his stock portfolio tracks very closely with the value of the Standard & Poor's (S&P) 500 Index, so S&P 500 futures would provide an effective hedge. A futures hedge would leave his stock holdings undisturbed. Transaction costs

would be limited to nominal futures commissions and the opportunity cost of the margin put up. Further, a sell stop order could be used for the opening transaction, requiring prices to demonstrate a specified degree of weakness before the hedge was triggered.

He decides to hedge. But this still leaves two questions: How many futures contracts will it take? and, When should the hedge be put on? The first question is easily answered. The contract size for S&P 500 futures is $500 times the index. With the index at 700.00, for example, the value of one S&P 500 futures contract is ($500 × 700.00 =) $350,000. Stocks comprise half of the $26 million portfolio, or $13 million. Thirteen million dollars divided by $350,000 equals about 37; that's the number of S&P 500 futures contracts needed to hedge $13 million worth of stocks.

The second question is not as straightforward, as it requires a market judgment. The stop order to initiate the hedge must be placed far enough away so as not to be triggered by random price movements but no so far that serious losses are sustained before the hedge is activated. Technical analysis can be used to good advantage in selecting the price level at which to place the resting sell stop order.

We'll assume that Thompson places his futures hedge and that his assessment was correct: The broad stock market falls some 11 percent over the next 6 weeks. The results of his hedge would be:

Short Hedge in S&P 500 Futures

Cash Index		*Futures*	
700.00	Now	Sold 65 contracts at	702.00
623.00	6 weeks later	Current price:	625.00
Loss = 77.00		Gain =	77.00

His portfolio, which is represented by the cash index, would have sustained short-term losses of about $1.4 million (77.00 × $500 × 37) during the period if it had not been hedged. Because there was no change in the basis in this example, the short position earned back the same amount, so his unrealized losses are, at the moment, zero. If Thompson concluded that the decline had run its course and that the prevailing uptrend was about to take hold again, he would close out his short futures position at this point, returning his stock portfolio to an unhedged status.

However, let's assume that that is not the case. New factors have entered the picture during the 6 weeks, causing our money manager to revise his outlook. He no longer considers the setback as a reaction in a bull market but as the first downward step in a new bear market. The assessment

calls for him to sell his common stocks and move the money into the fixed-income sector. However, there's no need for him to "dump" his stock, as the hedge will continue to protect his holdings. He sets an orderly selling program in motion. As his portfolio of stocks is reduced, he gradually closes out his futures positions, leaving the hedge as balanced as he can, until all the stocks are sold and the last short futures position has been covered.

What would have happened if Thompson had misread the market and stock prices had continued to climb after he had placed his short hedge? Like most investment miscalculations, it would have cost him money. However, in this case the losses would be mostly ones of opportunity. He would lose the potential income that the margin money might have earned elsewhere. He would lose the gains from rising stock prices because the loss on the short futures position—as long as he has it—would cancel them out. And he would be out the brokerage commissions.

Portfolio Insurance

Portfolio insurance is another name for dynamic asset allocation. It is also known as dynamic hedging, which you met earlier. The idea is straightforward enough. Over the years, stocks have outperformed all other liquid investment media. The goal of dynamic asset allocation is to keep money in stocks as long as stock prices are going up. When stock prices start to decline, some stocks are sold and the money moved into risk-free media. When the decline has ended and the stock market has turned up again, the stocks are repurchased.

For large portfolios, stock index futures simplify the strategy somewhat by making it unnecessary to sell and rebuy actual shares. If strategy calls for reducing equity exposure by 2 percent, for example, the portfolio manager can sell short an amount of stock index futures equal to 2 percent of the portfolio's value. That is equivalent to converting 2 percent of the portfolio to cash. When the decline subsides, the portfolio manager covers his short position in futures. The portfolio remains undisturbed. Transaction costs are also much less than those incurred in selling and buying actual stock.

However, if the theory of portfolio insurance is simple, the practice is not. There are many difficult questions to be answered. The portfolio insurer must decide the minimum performance he will accept from his portfolio. He must determine what percentage of his portfolio is to be hedged and how much of a decline he will accept in portfolio value before he starts selling futures.

The strategy described above assumes that stock prices have an upward bias and that declines will be moderate and soon corrected. That

may not be the case. If the market is very volatile, the portfolio insurer may be forced to sell index futures at much lower prices than he expected, receiving, as a result, little or no hedge protection.

Effective portfolio insurance requires very frequent futures transactions. The portfolio insurer must decide on the timing of his reaction to a stock market decline; will he react instantaneously, or will he wait an hour? 2 hours? until tomorrow? A lagged response may lower transactions costs in a sideways trending market, but it could prove deadly if the market falls sharply for several days in a row.

A hedge in stock index futures *options* is an alternative. Taken before the fact, it would preclude some of the foregoing problems. We'll discuss options in Chapter 14.

INTEREST RATES

On October 12, 1975, the opening bell rang on a new breed of futures. On that date, the Chicago Board of Trade began trading in the first interest rate futures contract—the Ginnie Mae.

Ginnie Mae stands for GNMA, which stands for Government National Mortgage Association, a division of the Department of Housing and Urban Development. The asset underlying this new futures contract was a certificate issued by Ginnie Mae. The certificate represented a pool of $100,000 worth of Federal Housing Administration and Veterans Administration home mortgages. Payment of principal and interest was "passed through" by Ginnie Mae to the bearer of the certificate and was guaranteed by the U.S. government.

The original Ginnie Mae futures contract was settled by the delivery of a receipt signifying ownership of a Ginnie Mae certificate. Later, when the Ginnie Mae futures market was faltering, a cash-settled contract was introduced in an attempt to revive it. It was not successful, and Ginnie Mae futures are no longer traded.

Today's interest rate futures markets can be broken down into short-term and long-term interest rates. The short-term markets comprise U.S. Treasury bill futures, Eurodollar futures, 30-day Federal Funds futures, and 1-month LIBOR futures. The long-term markets are the U.S. Treasury note futures and U.S. Treasury bond futures. In addition, there is a futures market in municipal bonds that is based on an index.

Before we talk about futures, let's take a brief look at the underlying instruments themselves. Bills are the shortest-term Treasury securities. They are auctioned every Monday afternoon by the Federal Reserve in 90-day and

180-day maturities. They are the only Treasury security that does not have a coupon; T-bills are sold at a discount and redeemed at par. This price difference represents the effective yield. Treasury bills are widely held, very liquid, and therefore excellent indicators of money market conditions.

Treasury notes have maturities of 1 to 10 years. They are not discounted. Annual yields are stated in the coupons they bear, and payments are made to noteholders every 6 months. Two-year Treasury notes are issued each month; 4-year notes, 5-year notes and longer are sold quarterly.

Treasury bonds are the longest-term Treasury security, with maturities extending out to 30 years. Like T-notes, they bear coupons and pay interest semiannually. They are the principal source of revenue for funding of the U.S. national debt and stand as international benchmarks for long-term interest rates.

Municipal bonds are coupon-bearing debt obligations of state and local governments and their authorities, issued primarily to finance public works projects. Interest paid to municipal bondholders is generally free of federal income tax and state income tax in the state of issue. The municipal bond market is over the counter and has grown dramatically in recent years.

A Eurodollar is simply a U.S. dollar on deposit in a bank outside the United States. Most are found in the London, England branches of major world banks, where they are the basis for loans of U.S. dollars to European borrowers. The Eurodollar market began in the late 1950s, ostensibly as a way to avoid certain domestic banking regulations, and it has grown rapidly in size to rival U.S. markets in short-term instruments.

The "instruments" underlying 1-month LIBOR futures and 30-day Fed Funds futures are nominal bank deposits. For 1-month LIBOR, the deposit is 3 million Eurodollars. For 30-day Fed Funds futures, it is 5 million U.S. dollars.

These two relatively new futures markets provide vehicles for hedging very short-term interest-rate exposure, filling a niche in the risk spectrum that was vacant before their arrival on the scene.

The Yield Curve

No discussion of fixed-income securities is complete without mention of comparative yields. In the financial markets, yield refers to the rate of return on an investment. If you buy a $1000 par value U.S. Treasury bond with an 8 percent coupon, it will pay you $80 per year in interest. That dollar amount is fixed. But the market price of a Treasury bond is not fixed. It changes with market conditions. If you paid only $900 for the bond, your

yield would be 8.1 percent ($80 ÷ $900). That is referred to as the bond's current yield.

There is also something called "yield to maturity." This number takes into consideration that you will receive par value ($1000) for the bond when it matures. If you bought the bond for less than par, its yield to maturity would be slightly higher than its current yield, reflecting the extra cash you will get when the bond matures. By the same token, if you bought the bond at a price above par, its yield to maturity would be less than the current yield.

A yield curve plots yield against time to maturity for an array of like securities.

A shorthand way to express the relationship between the yield to maturity of different securities is to plot them together on a graph. The plots are then connected to form a "curve." To be certain that it is only yields that are compared, it is necessary that the securities plotted be similar in risk, callability, conversion features, and the like. The idea is to measure yield against time to maturity, and nothing else.

Treasuries make an excellent example. Suppose the following (hypothetical) conditions pertain:

U.S. Treasury Notes and Bonds

Maturity Date		*Yield to Maturity*
September	1996	4.05%
February	1997	5.24%
August	1997	5.57%
November	1997	5.66%
April	1998	5.79%
October	1998	5.90%
October	1999	6.09%
May	2003	6.36%
July	2007	6.68%
March	2009	6.70%
April	2014	6.83%
June	2019	7.01%

A yield curve based on these data is shown in Figure 17. As you can see, short-term yields are lower than the yields farther out. Yields increase as maturities lengthen, so the curve slopes upward to the right. This is referred to as a "normal" yield curve. Investors receive a greater return to compensate them for tying up their money for a longer time. Banks, who generally borrow short term and lend long term, find this a healthy economic environment.

Prices of fixed-income securities and interest rates are inversely related. When interest rates go up, their prices go down; when interest rates go down, their prices go up.

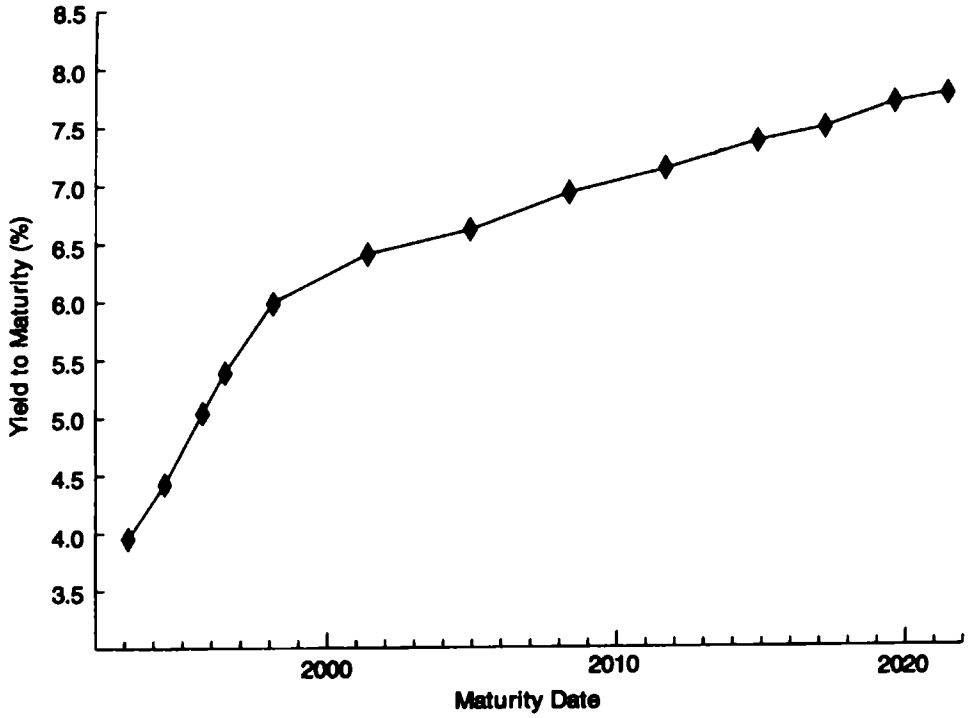

Figure 17 A yield curve compares securities that differ only in their time to maturity. This example is for U.S. Treasury securities and is based on the maturities and yields shown in the accompanying table. Yields increase as maturities lengthen, so the curve slopes upward to the right. This is referred to as a "normal" yield curve.

When short-term yields are above longer term yields, the yield curve is said to be "inverted." One of the possible causes of an inverted yield curve would be investor expectations that long-term rates are about to fall sharply. Their active buying of long-term paper drives its price up (and yield down).

The entire yield curve structure may also move up or down without changing its shape or angle, reflecting higher or lower interest rates across the board.

Price Up, Yield Down

Because the returns on T-notes and T-bonds are fixed dollar amounts, the only way an old note or bond can reflect present interest rates is for its market price to change. For example, an 8 percent note with $1000 par value pays $80 per year interest. That's constant. If the current rate for other investments of that same length and degree of risk is 7 percent, investors will buy the 8 percent note for its higher yield, and in so doing drive its market price up to the point ($1143) where its effective yield is 7 percent ($80 ÷ $1143 = .07).

The process works the same way in the other direction. If a note paying $80 a year is considered by the market to be overpriced (yield too low), investors will sell it and buy something else. Their selling pressure drives the price down. This effectively raises the yield because the $80 per year return does not change, as shown in the following:

Ambient Long-Term Interest Rate (%)	*Annual Return on Bond ($)*	*Market Price of Bond ($)**
6%	80	1333
7%	80	1143
8%	80	1000 (par)
9%	80	888
10%	80	800

*$80 divided by the interest rate.

Interest rate futures markets reflect this inverse relationship. Interest rate futures express the values of the underlying instruments, not the interest rates themselves. Falling interest rates mean rising T-bill, T-note, T-bond, and Eurodollar futures prices. A speculator who is looking for interest rates to go down buys interest rate futures. A speculator who expects interest rates to rise sells interest rate futures.

Price Relationships

Interest rate futures prices may be at a discount or a premium to the prices for cash instruments. These price relationships do not reflect a shortage or surplus of the cash commodity, as in the agricultural futures markets. They reflect the nature of the yield curve for the underlying cash asset. If the yield curve of the underlying cash asset is negative, with yields falling as maturities become more distant, futures prices will be at a premium to cash. If the underlying yield curve is positive (yields rising with increasing maturities), futures will trade at a discount to cash.

Arbitrage between the cash and futures markets keeps these relationships intact. The rationale is the same as that presented earlier for grains; arbitrageurs buy the cheaper asset (cash or futures) and sell the one more dear, forcing the two prices back into line. As with all futures contracts, the difference between cash and futures prices disappears as the futures contract approaches maturity. However, there are other considerations, and their complexity puts them outside the scope of our discussion here.

Hedging

A hedger who wants to protect against a decline in interest rates would take a long position in interest rate futures. For example, suppose a regional telephone company has just won a long-standing rate dispute with the state utilities commission. As a result, the company has been awarded damages of $5 million in state funds. The money will be paid in cash and will arrive in about 6 months. The telephone company intends to use the funds to buy a small subsidiary, but that purchase will not take place for about 9 months. The comptroller of the telephone company intends to park the money, when it arrives, in 90-day Treasury bills.

It is now January, and current short-term interest rates are running 7 percent. However, the Fed has been loosening money of late. The comptroller fears that short-term rates may slip considerably before his funds ar-

rive and would like to lock in his return now. Cash T-bills are 92.45 and June T-bill futures are trading at 92.25. He buys June T-bills futures. Because the size of the T-bill futures contract is $1 million, he needs five contracts to be fully hedged.

On June 1, 6 months later, the comptroller of the telephone company receives a check for $5 million from the state treasurer. He now has two options: (1) buy $5 million worth of 90-day T-bills in the cash market and close out his long futures position; (2) take delivery against his long futures position, in which case he will receive (and pay for) $5 million par value worth of cash T-bills with 90 days to maturity. He decides on the former course of action.

If interest rates have fallen, his hedge will have provided protection against the opportunity loss:

Long Hedge in Treasury Bill Futures

Cash			*Futures*	
T-bills at price of	92.45	January	Bought 5 June at	92.25
Bought 5 at price of	93.87	June	Sold 5 June at	93.87
	+1.42			+1.62

If the comptroller closes out his futures position with an offsetting futures transaction and buys the actual T-bills in the cash market, they will cost him 92.25 (93.87 cash less than 1.62 gain in the futures transaction). If he accepts delivery of actual T-bills in settlement of the futures contract, they will also cost him 92.25, the price at which he made his futures contract in January.

If the comptroller's estimate of the situation had been incorrect and interest rates had moved higher in the interim, the hedge results would look something like this:

Long Hedge in Treasury Bill Futures

Cash			*Futures*	
T-bills at price of	92.45	January	Bought 5 June at	92.25
Bought 5 at price of	91.50	June	Sold 5 June at	91.50
Opportunity gain = +.95			Loss = −.75	

It still makes no difference how the comptroller acquires the actual T-bills. If he takes delivery against the futures contract, the T-bills would cost

him 92.25; the effective price of T-bills bought in the cash market would be the same: (91.50 cash + .75 futures loss =) 92.25.

In either case, the comptroller has $5 million worth of 90-day cash Treasury bills in June for which he fixed the yield 6 months earlier. These will mature in September, making the cash available for the planned purchase of the small subsidiary telephone company at that time.

Convergence Cost

As we have said before, the difference between cash and futures prices tends to decrease as the futures contract approaches maturity, and the difference shrinks to near zero during the delivery period. This convergence of futures and cash prices can create windfall gains or losses for the hedger, depending on the particular situation.

If a short hedge is placed in a normal market (where futures prices are higher than cash), the convergence of futures and cash creates gains for the hedger.

If a short hedge is placed in a normal market (where futures prices are higher than cash), the convergence of futures on cash creates gains for the hedger. It doesn't matter whether the (short) futures price goes down or the (long) cash price goes up; both movements create gains. With a long hedge in a normal market, convergence causes losses. These effects are shown graphically in Figure 18.

The situation is reversed in an inverted market. When futures prices are below cash, convergence of cash and futures prices creates gains for a long hedge and losses for a short hedge (see Figure 18).

The two T-bill examples just cited were long hedges in inverted markets, an ideal environment. In both cases the opening basis was +.20 (92.45 – 92.25), and the closing basis was zero. The hedger earned a 20-point windfall gain from the change in basis. That is why the comptroller paid only 92.25 for his T-bills, though the cash price for T-bills was 92.45 when the hedge was established.

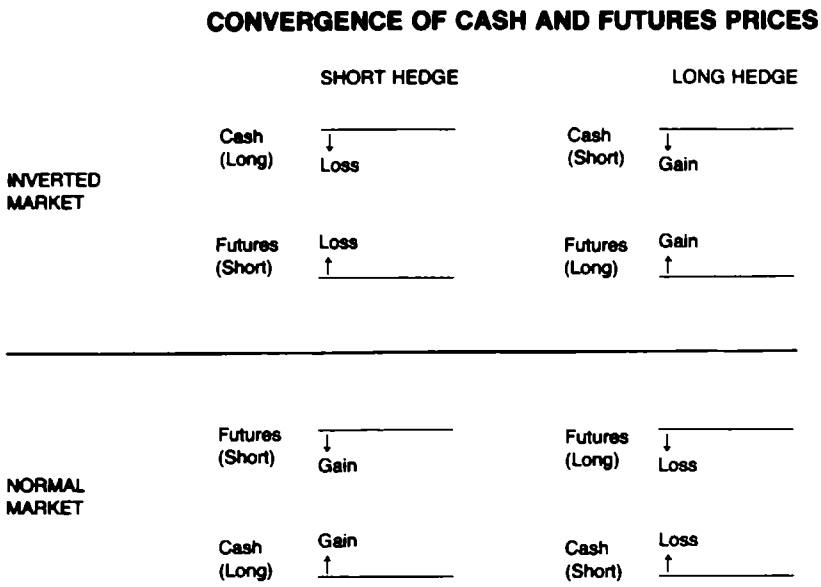

Figure 18 Cash and futures prices converge as futures approach maturity and are virtually equal during the delivery period. This convergence changes the basis, creating gains or losses for the hedger, depending on the situation. Long hedgers sustain convergence losses in normal markets and convergence gains in inverted markets. The reverse is true for short hedges. The effect is so strong, in fact, that short hedges may be inadvisable in a steeply inverted market. The diagram here depicts these effects graphically.

Another Example

The financial officer of a small Midwestern college receives a bequest from the estate of an alumnus who has recently died. The gift is in the form of securities, specifically $1 million par value of long-term U.S. Treasury bonds. The financial officer's long-range outlook for interest rates is higher, and he'd rather have the money in other investment media; however, the alumnus has specified in his will that the bonds are not to be sold for 1 year after his death. To protect the market value of the bonds during that time, the financial officer hedges by selling 10 T-bond futures contracts on the Chicago Board of Trade, selecting a maturity month that is beyond the 1-year waiting period.

The financial officer's forecast turns out to be correct. One year later, long-term rates have risen 1½ percentage points, and the prices of cash T-bonds have fallen from near 100 down into the mid-80s.

The results of the hedge (no basis change) are:

Short Hedge in Treasury Bond Futures

Cash Bonds		*Futures*	
99-22	Now	Sold 10 contracts at	98-22
84-29	1 year later	Bought 10 contracts at	83-29
−14-25			+14-25

The 14-25/32 fall in the price of cash bonds translates to a loss of $147,800 for the $1 million portfolio. If the financial officer had not hedged the cash T-bonds, they would have lost nearly 15 percent of their value in 1 year.

Is this example realistic? It would not have been 20 years ago, when bond prices moved like turtles. If is now. In 1994, for example, Treasury bond prices tumbled 16 points. The following year they regained all the lost ground, creating a swing of 1024/32 in a 24-month period.

SUGGESTED READING

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Chapter 13

Money Management for Speculators

It's difficult to say anything provocative about money management. Most advice sounds like little more than common sense. And yet it is not common. Unsuccessful futures trading can almost always be traced back to bad money management. Anyone can be wrong on the markets. To allow a mistaken futures position to wipe out your trading capital is another matter. The philosophy is summed up in an adage that's been around for so long that it can be easily overlooked:

Cut your losses short, and let your profits run.

We once knew a speculator who would close out a new position immediately if it ended the day with a loss. He might try again tomorrow, but he would not keep any new position overnight unless it settled that first day with an unrealized profit. This may be a bit extreme, but it epitomizes the philosophy.

Unsuccessful futures trading can almost always be traced back to bad money management.

The difficulty with closing out a losing position is that you have to admit to yourself (and to your broker) that you were wrong about the market. The larger the loss, the more egg on your face. You also convert a paper loss into a realized loss. Money that was only in jeopardy before is now irrevocably gone. You can no longer nurture the vain hope that the market will turn around tomorrow and bail you out.

Studies of actual trading performance conducted by the U.S. Department of Agriculture concluded that staying too long with a losing position was one of the major reasons that speculators in the study lost money. Willingness to close out a losing position early was identified as the mark of a successful futures trader.

Setting Maximum Risk

It seems out of keeping with the computer age, but simply deciding beforehand how much loss you are willing to accept in a trade will substantially increase your chances for success. The maximum acceptable loss can be expressed as an amount of money—say, $500—or as a percentage of original margin. If your unrealized loss reaches that predetermined level, you close out the position.

Using Stop Orders

The stop order is tailor-made for cutting losses short. It rests at some predetermined point above or below the current price level, waiting to close out the offending position with no further action or decision on your part. You could be on the golf course or vacationing in Europe at the time.

Snuffing out small losses while they are still small is the single most important precept of good futures market money management.

How do you select the price level at which to place the stop order? You can set a maximum acceptable loss, as we discussed just now. Or you could put technical analysis to work for you. For example, let's say that cotton prices have staged a sustained advance over the past 8 months. You now believe that cotton has topped out and is on the threshold of a sustained decline. You are not in the market.

The contract high in December cotton, which was set 3 weeks ago, is 68.70 cents per pound. Since then, prices have backed off a penny or so. You sell short one contract of December cotton at 67.57 and at the same time place a buy stop just above the old contract high at 68.71. If cotton prices rally to new contract highs, your buy stop will be activated, and you will be out of the market with a loss of about $600 plus commissions. If cotton prices fail to make new highs and the decline you anticipated begins, you will be well positioned.

Another example: You have been long one contract of December gold futures for 4 weeks and have a $2000 profit. To protect it, you intend to close out your long position if gold prices show evidence of weakening. December gold is trading at $420.50 an ounce. You decide, on the basis of technical analysis, that there is good potential support in December gold at $414.00; that if prices break below that level, the market could go much lower. You place a sell stop order at 413.90, which is one "tick" below $414.00.

If weakness sets in and your stop order is hit, it becomes a market order, and your long position is sold out immediately. If gold continues to rally and never touches 413.90, your stop order will never be activated; you would continue to accrue profits. As gold prices climb, you would move your stop order up, each time using technical analysis to help you determine the price level at which to place the stop.

As you may have noticed, the stop order—in addition to cutting losses short—also allows profits to run. Profits are not taken unless the price level stated in the stop order is reached. As long as the market is moving in a favorable direction, the futures position is left open.

The stop order—in addition to cutting losses short—also allows profits to run.

A good rule is that a stop-loss order (which is what we have been discussing here) is never moved in the direction of greater losses. In other words:

A sell stop-loss is never lowered, a buy stop-loss is never raised.

Raising a buy stop or lowering a sell stop is wrong on two counts. First, it demonstrates reluctance to take the loss, which is a dangerous mind-set. It also cancels what should have been a good argument for placing the stop at its original level.

Snuffing out small losses while they are still small is the single most important precept of good futures market money management. There is no recovery if you hang on stubbornly to a losing position until it has consumed most of the money you have set aside for trading, as you will have no capital left to try again. On the other hand, a series of small losses can be recouped with one good gain.

This is not to say that such stop orders always work without a hitch. Markets can be perverse. Prices have been known to back down, touch off waiting sell stops, and immediately take off on an extended rally. As we have said before, technical analysis deals with probabilities, not certainties.

OTHER MONEY MANAGEMENT GUIDELINES

Successful futures speculators generally adhere to certain other principles:

1. **Diversification.** If you have a large equity in the futures markets, it is wise not to place it all in one or two commodities. Unlike the stock market, the prices of most commodities move independently. It is possible for the precious metals to be rallying, the grains to be moving sideways, and the petroleum complex to be in a downtrend—all at the same time. Professional money managers who control large trading accounts will have positions in as many as 10 different futures markets, to take advantage of the fact that a setback in one may be offset by gains in another.

2. **Have a Plan.** When you take a futures position, consider where you are going with it. Decide how much loss you are willing to take and how much profit you expect to gain. Compare the two. Is the possible profit worth the possible loss? Some traders make a written plan, listing all the factors that bear on a particular trade. Futures positions taken on impulse have a low probability of success.

Even experienced traders can fall into the trap of acting without adequate forethought. A professional floor trader on the Chicago Board of Trade once told this true story to us. He had had a very successful day in the soybean oil pit, where he spends most of his time. He had to pass the silver pit on the way back to his office; it was still active, as it closed later than bean oil. He stopped to say something to a fellow trader there. Before long he was caught up in the buying and selling, and in just a few minutes in that unfamiliar market he lost most of what he had gained that day.

If the loss of the money you are using to trade would have a significant effect on your lifestyle, the money does not belong in the futures markets.

3. Keep Your Own Counsel. Don't underestimate yourself. If you have done your homework and made your trading decision, don't let yourself be swayed by random remarks or rumors. There is never any shortage of "expert" opinion on any topic. If conditions really change, of course you'll have to change with them. But be slow to discard the analysis you did.

4. Be Open to Divorce. Psychologists have established that most of us are vulnerable to what they call the "endowment effect." That is, people prefer the status quo even when faced with good arguments for changing it. There's not much you can do about it, except to be aware of the phenomenon when you are deciding whether to divorce yourself from a losing futures position.

5. How Much Money? Trading capital should be above and beyond the funds set aside for college, medical emergencies, and retirement. A good rule is: If the loss of the money you are using to trade would have a significant effect on your life-style, the money does not belong in the futures markets.

6. Try to Keep Cool. An objective, unemotional approach to the futures markets is easy to maintain—until you take a position. The stakes change when real money is involved. A loss taken on paper is philosophical. A loss taken in your bank account represents a vacation, or a new car, or a paint job for the house that you won't have.

A speculative futures position is a unique stress generator. It makes little difference how you're doing. If you have gains, you are concerned that you will lose them; if you have losses, you are concerned that you will have to take them. The resulting psychological pressure can lead you to cut your profits short and let your losses run, which is the exact opposite of the successful strategy discussed before.

One of the benefits of technical analysis, and one that we haven't mentioned specifically before, is that it provides an objective basis for trading decisions. It supplies a mathematical rationale for picking price objec-

tives. It enables a trader to assign values to market strength or weakness and gives him tangible reasons for selecting one point over another to enter or leave the market. It helps maintain an objective approach.

7. **Never Add to a Losing Position.** The fact that the strategy has the name of "averaging down" gives it no credence. You should be closing out the offending position, not increasing it.

Profitable positions may be added to, but care must be taken not to build a top-heavy structure that will collapse at the first small decline. As an example, suppose you bought one contract of June T-bond futures at 96-10. June bonds immediately rose to 97-00. Pleased with your profits, you bought two more contracts at 97-05. The rally continued, and you jubilantly bought four more contracts at 98-12, which is where June bonds are trading now.

The following is a summary of your transactions:

Purchase	*Total Number of Contracts*	*Average Price*
Bought 1 at 96-10	1	96-10
Bought 2 at 97-05	3	96-28
Bought 4 at 98-12	7	98-00

Because you bought a larger number of contracts at each higher price, the average price of all contracts increased sharply. The average price is now only 12 ticks below the current price; any setback of more than $^{12}/_{32}$ would place your entire position in a loss. You would have called the market right but self-destructed in your trading strategy.

A more prudent way to add to a profitable futures position is to make each successive addition the same or smaller size than the original position. Then the average price will rise more slowly, and you will never find yourself in the situation where a small decline would cancel all your trading profits.

PROFESSIONAL MONEY MANAGEMENT

People who manage money for others in the futures markets fall into two categories: commodity trading advisors and commodity pool operators.

Commodity Trading Advisor

A commodity trading advisor (CTA) is defined as anyone who receives pay to counsel others on the advisability of buying and selling futures contracts. The advice can be verbal or written and includes electronic delivery.

CTAs also manage money directly, utilizing the client's power of attorney to order trades for the client's account. In this case, the CTA is required to provide the client, and the client is required to acknowledge in writing, a risk disclosure document. It spells out the financial pitfalls inherent in futures trading, discloses the business backgrounds of the CTA and his principals for the preceding 5 years, describes the trading program the CTA uses, tells how the CTA is to be paid for his services, and presents the CTA's actual past trading performance.

Unless he is also a futures commission merchant, the CTA cannot accept funds directly from a client. The funds must instead be sent to the futures commission merchant through whom the CTA trades and where the client's account is maintained.

CTAs who manage money directly may charge two kinds of fees. Almost all charge an incentive fee, which is based on performance and typically runs 10 percent to 25 percent of profits above the previous high "watermark." Some CTAs also charge a management fee, which is paid whether or not the account earns a profit. This is generally a fraction of a percentage per month of the funds under management. Most CTAs require a substantial amount of money to open a managed account. Successful and well-known CTAs may have minimum account sizes of $100,000 or more. The client is responsible for all losses incurred by the CTA in trading the client's account.

CTAs must be registered through the National Futures Association, a self-regulatory organization that began operation in 1982. Registration does not constitute a recommendation of the CTA but signifies only that he has met the Commodity Futures Trading Commission's general requirements concerning experience, education, business affiliations, and financial status. In 1996 there were about 2500 registered CTAs.

Commodity Pool Operator

The commodity pool is the "mutual fund" of the futures markets. Virtually all commodity pools in the United States are organized as limited partnerships, with the commodity pool operator (CPO) acting as the gen-

eral partner. The public participant in a commodity pool is a limited partner, and as such his financial risk in the enterprise is expressly limited to the capital he initially puts up. The trading advisor for a commodity pool—the one who makes the day-to-day buy and sell decisions based on market knowledge and experience—is usually a third party chosen by the general partner.

CPOs are required to deliver to each prospective limited partner and receive written acknowledgment of a risk disclosure document. It must fully identify the pool; present the business background of the CPO and each of his principals for the past 5 years; disclose any actual or implied conflicts of interest; and show the pool's actual trading performance for its entire history or the preceding 3 years, whichever is less.

The amount of money needed to participate in a commodity pool varies from pool to pool, but it is generally much less than the minimum amounts required by CTAs. Many commodity pools are sold in units of $1000, with a minimum purchase of as few as two units. Generally, CPOs must be registered with the National Futures Association if they have pools totaling more than $200,000 or any pool with more than 15 participants.

Some commodity pools are huge, controlling millions of dollars in assets. Like any other big business, they have administrative, legal, and accounting expenses, and many pools have front-end sales charges. The risk disclosure document provided by the CPO to prospective participants is required to reveal these expenses on its front page and to state how they are to be defrayed.

A person considering joining a commodity pool should be aware of the trading advisor's track record in the markets. The record should comprise real-time trading, not a hypothetical computer simulation. The performance of commodity pools varies widely. In a recent year in which the best-performing fund gained 90 percent, the worst lost more than 50 percent and was closed out. The average annual return of commodity funds over the years is probably close to 10 percent, but that doesn't mean much if you happen to be riding a tiger.

Inquiry should be made into the procedure for getting out of the pool. Many pools allow the participants to close out their accounts only on certain predetermined dates; for example, on the last day of each calendar quarter. A prospective participant should also learn the pool's policy for distributing any gains.

The principal advantages of a commodity pool are (1) limited risk and (2) the ability to achieve wide diversification and professional money management for as little as $2000 in equity.

PROPRIETARY TRADING SYSTEMS

You won't be around the futures markets long before you start to receive unsolicited mail selling books, charting services, market letters, and the like. The highest priced items offered will be trading methods, which can have price tags of $2500 or more.

The trading method will usually have been designed and tested by a private individual, who is now offering it for sale. It is invariably based on technical analysis and may be worked by hand or by computer. Presented in the promotional copy will be a profit/loss record for the advertised method that is very successful.

The first question to ask is whether the trading performance shown in the brochure is real or theoretical. There's a vast difference between trading profits in the real world and a fictitious track record generated by simulated trades using past data.

The simulation process goes something like this: First, some trading rules are devised. They can comprise a few simple criteria or several pages of mathematical formulas. The trading rules are translated into a computer program. This program is fed into a computer along with a bank of historical data containing daily high, low, and closing prices for several futures markets. The computer simulates trading the rules over an extended period in the past. After each run, the results are examined, and the computer program is fine-tuned to optimize the gains and losses. The fine tuning often includes the addition of criteria for increasing the size of winning positions, as that has a dramatic effect on overall profits.

There's a vast difference between trading profits in the real world and a fictitious track record generated by simulated trades using past data.

The final program comprises a full-blown trading method that has worked extremely well in past markets. But that's not the question. No one can trade yesterday's markets. The question is, How well will the trading method work on tomorrow's markets? To protect prospective buyers of proprietary trading methods, advertisers are required by law to include in their promotional copy statements to the effect that:

- ✔ Unlike an actual performance record, simulated results do not represent actual trading.
- ✔ Because trades shown have not actually been executed, results may under- or overcompensate for certain market factors; for example, lack of liquidity.
- ✔ Simulated trading programs in general are designed with the benefit of hindsight.
- ✔ No representation is being made that any account will or is likely to achieve profits or losses similar to those shown here.

Enough said.

SUGGESTED READING

The Disciplined Trader: Developing Winning Attitudes, Mark Douglas. New York Institute of Finance, New York, 1990.

The Mathematics of Money Management, Ralph Vince. Wiley, New York, 1993.

14

Futures Options

You have just been transferred to Washington, DC. You come ahead to house hunt while your wife and children stay with her mother in San Francisco. You find the ideal house. It has just been completed and is standing empty. The price is $325,000. Concerned that the house may be sold to someone else before your wife can see it, you offer the builder $500 for the exclusive privilege of buying the house for $325,000 at any time during the next 10 days. The builder agrees.

You have bought an option on the house. During the next 10 days, you may exercise the option and buy the house for the agreed price of $325,000. If you do not exercise the option, it will expire at the end of that time and the builder will keep your $500.

For many years there was an over-the-counter market in options on common stock in the United States. If you're old enough, you may remember seeing the dealer's advertisements in the newspapers. The stocks on which the options were offered were usually "blue chips" like IBM, General Motors, and AT&T. The owner of the stock arranged with the dealer to sell an option on it at an agreed price. The dealer advertised for option buyers and earned a commission on each option he sold.

Those old over-the-counter stock options were not transferable. Unless a special arrangement could be made with a dealer to take it back and resell it, there were only two courses of action open to the option buyer. If the stock price changed enough to make the option worth exercising, he could do so and acquire the stock. If not, he simply abandoned the option when it expired.

An over-the-counter market in options on futures contracts had a short, scandal-plagued life in the early 1970s. Unscrupulous dealers, promising huge possible rewards with low risk, took in millions of dollars in premiums. But they did not hold the underlying futures contracts. They held only the hope that the options they sold would never become profitable to the buyers. The game ended when a sufficient number of option buyers with winning positions went looking for their rewards and found not cashiers' checks but disconnected telephones and no forwarding addresses.

Since 1982, futures options have been traded on futures exchanges, where their financial integrity is warranted by the exchange and an option clearinghouse. The assets underlying these options are futures contracts traded on that same exchange. Exercise of the option results in the transfer of a futures position from the option seller to the option buyer at the striking price.

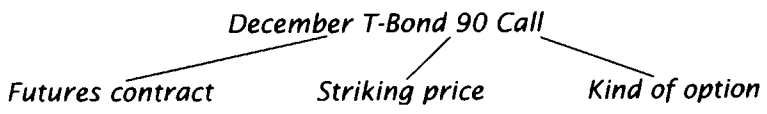
Exchange-traded options, in addition to enhancing investor confidence, added an important third possible course of action for option buyers and sellers. No longer were their choices limited to exercising the option or letting it expire. Like a futures contract, an exchange-traded option position can be offset with an opposing market transaction, and the option buyer or seller is then out of the market. This innovation opened the door to a dramatic increase in futures option activity.

NUTS AND BOLTS

The option you bought on the house in the preceding example is referred to as a *call*. A call confers the right to *buy* an asset within a certain period of time at an agreed price. (It gives you the privilege of calling the asset to you.) The $325,000 was the option's *exercise price* or *striking price*. The day the option ran out is called its *expiration date*. The $500 you gave the builder is referred to as a *premium*.

There are also options that entitle you to *sell* something to someone else. These are known as *puts*. (They give you the right to put it to the other person.) The definitions of exercise price, expiration date, and premium are the same.

A futures option takes its name from the futures contract underlying it. For example, a call option on December T-bond futures with a striking price of 90-00 would be referred to as:



The name of the futures contract is first. This is followed by the striking price, which is chosen by the exchange and is always a round number (no fractions); and, last, the kind of option (put or call).

If you buy a December T-bond 90 call and exercise it, you will receive from the option seller a long position in December T-bond futures at a price of 90-00.

A put option on April hog futures with a striking price of 62.00 cents per pound would be referred to as:

April hogs 62 put

If you bought this option and exercised it, you would receive a short position in April hog futures at a price of 62.00 cents per pound.

There are listed options that mature in months where there is no corresponding futures contract. For example, there are monthly options on deutsche mark futures, but deutsche mark futures contracts mature only in March, June, September, and December. These (and other) options have been added by the exchanges to provide option traders with more choices. The futures contracts underlying these options are generally those next closest in time. For example, if the holder of a July deutsche mark call option exercises it, he will receive a long position in September deutsche mark futures.

Actual Prices

We can learn a great deal by examining a typical newspaper price table for a day's trading in futures options. The following is for options on crude oil futures:

Strike	Calls			Puts		
Price	June	July	August	June	July	August
1800	2.18	2.41	2.46	0.01	0.04	0.11
1850	1.68	1.89	2.02	0.01	0.08	0.18
1900	1.18	1.41	1.60	0.01	0.11	0.25
1950	0.65	1.01	1.35	0.04	0.22	0.41
2000	0.24	0.66	0.91	0.06	0.36	0.56
2050	0.03	0.23	0.43	0.80	0.93	1.08

Est. vol. 6652; Wed vol. 7884 calls, 9725 puts.
Open interest Wed. 183,545 calls, 142,485 puts.

The line of bold type across the top of the table identifies the market. The letters "NYM" stand for New York Mercantile Exchange, where both crude oil futures and options on crude oil futures are traded. One thousand barrels is the size of the underlying futures contract. The premium for the option is—like the price of the underlying futures contract—expressed in dollars per barrel. Volume and option interest data are shown at the bottom of the table.

The far left column shows the striking prices that are presently available for trading, with the decimal point missing; a striking price of 1800, for example, means $18.00 per barrel. These striking prices are selected by the exchange, and new strikes will be added when necessary to keep up with the market. For example, if crude oil futures prices began to trade in the $20–$21 per barrel range, the exchange would add options with strikes of 2100 and 2150.

The next six columns show call and put settlement prices (premiums) for the various maturity months. Call prices are shown for maturities of June, July, and August. Put prices are shown for the same 3 months. Theses maturities coincide with the maturity months of their underlying futures contracts.

In most published price tables, only the three nearest option maturities are shown. When the nearest option expires, a new one is added. In mid-May, for example, when the June crude oil options mature and are taken off the board, the newspaper will add the daily prices for September puts and calls. Options with other maturities, not shown in the newspaper, may also be traded by the exchange. Crude oil futures options, for example, are traded out to 12 months ahead.

To translate the crude oil futures option premiums into dollars and cents, you have to do some arithmetic. The premium is expressed, as we said before, in dollars per barrel. The premium of 1.41 for the July 1900 call, for example, means $1.41 per barrel. This number multiplied by the contract size of 1000 barrels equals $1410. That's what it would cost you (plus commissions, of course) to buy the July crude oil 1900 call. That's the amount that would be deposited into your account if you sold short a July crude oil 1900 call.

In most futures options, the premiums are expressed in the same terms as the underlying futures markets. Premiums for sugar options are in cents per pound for 112,000 pounds; so are sugar futures. Gold option premiums and gold futures prices are both expressed in dollars per troy ounce. Options on grain futures are all based on 5000 bushels, and their premiums have fractions just like grain futures prices (23¾, for example).

There are some exceptions. Futures price for T-bonds, 10-year T-notes, and Municipal Bond Index futures change in increments of 32nds; premiums for options on those futures change in increments of 64ths. Grain futures prices change by ¼ cent; options on them have a minimum "tick" of ⅛ cent. Option premiums for the soybean complex (beans, meal, and oil) also change exactly half as fast as the prices for their underlying futures.

MORE NUTS AND BOLTS

You met some of the special terms that surround options before. We'll go over them again, and then there are a few others you should know:

- ✔ *Premium.* The market price of an option, paid by the option buyer and received by the option seller.
- ✔ *Expiration date.* The day on which an option expires. After that date the option is worthless and must be abandoned.
- ✔ *Exercise (striking) price.* The price at which the futures contract changes hands if the option is exercised.

The *premium* is the market price of an option, paid by the option buyer and received by the option seller.

Because it confers the right to obtain a long position, the value of a call option increases when the price of the underlying futures contract increases. When the call becomes profitable to exercise—that is, when it is more advantageous to exercise the call option and close out the resulting futures position than to buy the futures outright—the option is said to be *in the money*. A call is in the money, therefore, whenever the underlying futures price is above the option's strike price. Suppose you held a December gold 425 call and December gold futures were trading at 432.70. If you exercised the call, you could acquire a long position in December gold futures at an effective price of $425 per ounce and immediately resell it at $432.70 per ounce in the open market. The relative advantage of the call would be ($432.70 – $425.00 =) $7.70 per ounce, and the call would be described as $7.70 in the money.

The *exercise* or *striking price* of an option is the price at which the futures contract changes hands if the option is exercised.

If the price of December gold should fall to 420.00, the call option in the previous example would be referred to as *out of the money*. It would be $5.00 per ounce cheaper to buy the futures contract directly on the exchange (420.00) than to obtain it by exercising the option (425.00).

On the rare occasions when the option's striking price and the price of the underlying futures are the same, the option is said to be *at the money*.

The mechanics of a put are just the opposite. The owner of a put has the right to sell the underlying futures contract at the striking price. Short positions gain in value when prices decline; so, therefore, does a put. A put is in the money when the underlying futures price is *below* the put's striking price because it is then more advantageous to acquire the short position via exercise than through an open futures market sale.

Suppose you owned a December T-bond 104 put and December T-bond futures were currently trading at 103-22. You could sell the futures short at 103-22 on the CBOT. But you could in effect sell December T-bond futures short at 104-00—$^{10}/_{32}$ higher—by exercising the put, so the put is in the money. If December T-bonds were to rally up to 104-12, however, it would cost you $^{12}/_{32}$ more to exercise the put than to sell short outright; the put would now be out of the money.

Option Value

An option has no practical value. You can't live in it or wear it to stay warm on a cold day. An option is worth what someone else will give you for it. If you had an option to buy a $15,000 sailboat for $5000, you would have no trouble finding a sailor willing to pay you something for it. You wouldn't find many willing to give you $10,000 for the option, however, as it would offer no advantage at that price.

Like futures prices, option values (premiums) are established by open bids and offers on the trading floor of the exchange. If you dissect the premium, however, you find that it is not homogeneous but is composed of two different kinds of value.

For example, the July crude oil 1900 call previously mentioned had a premium of 1.41 or $1.41 per barrel. Although it doesn't show in the table,

the settlement price for July crude oil futures that day was 20.02, or $20.02 per barrel. That means the underlying long futures position in July crude oil could be obtained at the striking price of $19.00 per barrel and sold at the market price of $20.02 per barrel, for a profit of $1.02 per barrel. The call option is in the money by $1.02. That amount has a name: It's called the option's *intrinsic value.*

Intrinsic value is the difference between the option's striking price and the underlying futures price. An option that is in the money has intrinsic value. An option that is out of the money has no intrinsic value. Intrinsic value changes when the price of the underlying futures contract changes. In the preceding example, if July crude oil futures closed the next day at 19.84, down .18, the intrinsic value of the July 1900 call would also decline by .18.

But that's not the whole story. Take another look at the premium for the July 1900 call. It's 1.41. That's greater than the intrinsic value by (1.41 – 1.02 =) .39. There's something else going on here. Why would a trader pay more for an option than it's worth? If you said something about time, you're right. That .39 is known as the option's *time value.* It represents what market participants are willing to pay simply for the time the option has left to run. Time value is found by removing the intrinsic value from the premium. What's left can be nothing else.

Time value reacts not to changes in the underlying futures price but to the ticking of the clock. It follows that the more days an option has until it matures, the greater should be its time value. We can verify this statement by using an excerpt from the newspaper price table presented before.

Look at the striking price of 1900. For both calls and puts, the premiums increase as the options move across the calendar. To prove that increasing time values are primarily responsible, we'll separate them out:

Option	*Premium*	*Maturity*	*Futures Price*	*Intrinsic Value*	*Time Value*
1900 calls	1.18	June	20.00	1.00	0.18
	1.41	July	20.02	1.02	0.39
	1.60	August	20.01	1.01	0.59
1900 puts	0.01	June	20.00	0.00	0.01
	0.11	July	20.02	0.00	0.11
	0.25	August	20.01	0.00	0.25

This table shows a snapshot of actual premiums for June, July, and August calls and puts on crude oil futures. The striking price for each option is $19.00 per barrel. The second and third columns show the premium for each option and its underlying futures price. The fourth column shows each option's intrinsic value (futures price minus striking price); the last column shows each option's time value (premium minus intrinsic value).

From the table, it is apparent that buyers are willing to pay more for options with longer maturities because they provide more time for the buyers' hopes to be realized. Sellers demand more for options with longer maturities because they are at risk for a greater period.

Buyers are willing to pay more for options with longer maturities because they provide more time for their hopes to be realized. Sellers demand more for options with longer maturities because they are at risk of exercise for a greater period.

The preceding breakdown contains other lessons. All the puts shown are out of the money, as their exercise price of 1900 is well below their underlying futures prices. Their intrinsic value is therefore zero. When an option has zero intrinsic value, its premium comprises entirely time value. And this means that if nothing else changes, the premium will drop to virtually nothing just before the option expires. That's why you sometimes hear an option referred to as a "wasting asset." The June 1900 crude oil put provides an example. This out-of-the-money option is very near expiration, and its (entirely time value) premium is only ($.01 × 1000 barrels =) $10.

Other Influences

We've seen how the time left to maturity affects an option's premium. There are two other major influences on the prices that buyers and sellers are willing to accept: the option's striking price and the volatility of the underlying futures price.

The first is self-evident. If an in-the-money 50 call has a premium of $3, the same call with striking price of 45 is going to be worth $5 more, as it has an additional $5 of intrinsic value.

This effect can be readily seen in the newspaper price table for crude oil futures options on page 147. The expiring June 1800 call would cost you 1.00 more than the June 1900 call, and that is exactly equal to the difference in their striking prices.

The effect of volatility is not as concrete but is very important. Buyers of options do so in the hope that the underlying futures price will move favorably and the option will increase in value. If the underlying futures price doesn't move, but instead trades quietly in a narrow range, buyers' hopes are dashed. Buyers are therefore willing to pay more for options on high-flying futures, and option sellers likewise insist on receiving more for them.

An extraordinary example of the effect of volatility on option premiums can be drawn from the soybean futures market in early 1988. In April, soybeans traded quietly. Then the specter of drought appeared, and the market erupted. Soybean options should therefore have had much more time value in June than they did in May, before the drought materialized. Here is the actual comparison:

Date	*Option*	*Underlying Futures Price*	*Option Premium*	*Intrinsic Value*	*Time Value*
May 5	August 675	7.08	40	33	7
June 21	September 1025	10.36	95	11	84

From May 5 to June 21, the time value of a slightly in-the-money soybean call option with 3 months to expiration increased from 7 cents to 84 cents, or 12 times over. The only factor that is significantly different between the two options is the volatility of the underlying futures contract at the time. In May volatility was normal. Six weeks later, soybean futures had soared to record highs and were swinging wildly between expanded daily price limits.

STRATEGIES

Buying Calls

The simplest, most direct use for an option is as a straight bet on the direction of prices over the next several days or weeks. If you believe conditions are right for soybean prices to take off, you could buy a call option on a soybean futures contract. If bean prices escalate, so will the value of your option, which can then be sold at a profit.

The option buyer's risk is limited to the price he paid for the option. No matter how far prices go against him, the option buyer will never receive a margin call. The worst that can happen is that the option expires worthless, and the entire premium is lost.

Why would a speculator choose an option over an outright long futures position in this situation? The most important reason is *limited risk.*

The option buyer's risk is limited to the price he paid for the option. No matter how far prices go against him, the option buyer will never receive a margin call. The worst that can happen is that the option expires worthless and the entire premium is lost.

Known, limited risk makes a futures option a more conservative investment than an outright long or short futures position. The differences can be readily seen if the two are compared in three different scenarios:

Gold: Long Call Option versus Long Futures Position

DECEMBER GOLD FUTURES PRICE = 380.00
DECEMBER GOLD 380 CALL PREMIUM = 9.00

	Gold Futures		*Gold 380 Call Option*	
1. Gold futures advance to 404.00	Buy at	380.00	Buy at	9.00
	Sell at	404.00	Sell at	31.00
		+24.00		+22.00

When futures prices advanced, gains in the call option virtually kept pace with gains in the futures. The difference in profits was $2.00 per

ounce. The reason? The option lost some time value while all this was going on.

The unique advantage of the call option shows in outcome No. 2, below, where gold prices fell sharply. A long position in futures would have lost 32.00, or $3200. The loss in the option was limited to $900, the premium paid:

	Gold Futures		*Gold 380 Call Option*	
2. Gold futures decline	Buy at	380.00	Buy at	9.00
to 348.00	Sell at	348.00	Expires worthless	
		–32.00		–9.00

Result No. 1, above, can be viewed in another light. The margin for the futures position in gold would be in the neighborhood of $3000; the rate of return on investment in the futures position is therefore $2400 ÷ $3000 = 80 percent. The premium for the option is $900 ($9.00 per ounce × 100 ounces). The rate of return on the call option is $2200 ÷ $900 = 244 percent.

Before you rush to the phone to start taking advantage of such dramatic profit possibilities, let's add another possible outcome:

	Gold Futures		*Gold 380 Call Option*	
3. Gold futures stay	Buy at	380.00	Buy at	9.00
to 380.00	Sell at	380.00	Expires worthless	
		0.00		–9.00

Gold prices don't have to collapse for you to lose your $900 premium. All they have to do is nothing. And if the prospect of limited risk should cause you to become overconfident and buy, say, four of these options, you would have created a situation with more inherent risk than a long futures position. You could lose your entire $3600 without futures prices ever going down one tick.

In versus Out of the Money

The option bought in the last example was at the money. Its intrinsic value was (380.00 – 380.00 =) zero. The premium of 9.00 was therefore all time value, which characteristically wasted away as the option approached expiration. It's also possible, of course, to buy options that are well into or out of the money, and each strategy has its own goals and purpose.

The greatest *potential* rates of return are found in out-of-the-money options. A speculator who is convinced that futures prices are on the threshold of a powerful rally would look for likely purchase candidates among calls that currently have no intrinsic value, as they will usually provide the highest percentage return on investment if prices advance.

Futures prices don't have to change for you to lose your entire premium for an out-of-the-money option. All they have to do is nothing.

Example: It is early July. You have been tracking cocoa futures for some time, and your technical indicators tell you that a rally is imminent. There are options on cocoa futures, and you decide that you'd be more comfortable with their known, predetermined risk. Nearby September cocoa is trading at $1350 per ton.

The question now is, Which call option do you buy? The following table shows what's available:

Strike	*Calls*			*Puts*		
Price	*September*	*October*	*December*	*September*	*October*	*December*
1250	111	148	159	1	3	14
1300	64	114	120	4	9	25
1350	27	69	88	17	24	43
1400	9	47	67	48	52	73
1450	3	29	46	83	94	103
1500	1	17	36	111	125	141

The first step is to choose an expiration month. The Octobers give you a lot of time, but they're relatively expensive; the premium for the at-the-money 1350 is almost $700. The Septembers require a much smaller cash outlay, and they still have 4 weeks before they expire. You decide that's adequate time for the rally to materialize.

September Call	Present Premium ($)	Premium if Futures Go to 1400 ($)	Gain (Loss) ($)	Result as % of Premium Paid
1250	111	150	390	35
1300	64	100	360	56
1350	27	50	230	85
1400	9	0	(90)	-100
1450	3	0	(30)	-100
1500	1	0	(10)	-100

The next step is to choose a striking price. (For purposes of discussion, we'll say that your target for September cocoa prices is 1400.)

The 1400, 1450, and 1500 are currently well out of the money. If September cocoa futures do not go above 1500, these three options would expire worthless, and your entire investment would be lost.

As the table above shows, the 1350 has the best potential return, but it too is not in the money. Its premium is 100 percent time value. If September cocoa futures stay at or below 1350 until the option expires, your entire investment would be lost here too.

At the other end of the spectrum are the 1250 and 1300. They are in the money, so virtually every point gained in September cocoa futures would also be gained in the call premium. If the underlying futures price does not change, the options will still be worth their intrinsic values at expiration. For example, if September cocoa futures are still at 1350 then, you could in the case of the 1300 retrieve $500 of your original $640 premium by selling the option for its intrinsic value. You would then be out only the lost time value of $140—plus commissions, of course.

There are other possible outcomes. If cocoa futures were suddenly to collapse to 1250 during the next month, all the options on the list would expire worthless. An unexpected rocket to $1500 per ton would cause the 1450 option—which you could have bought for $30—to be worth at least $500, a gain of 1666 percent!

The option you choose for your speculation reflects your market expectations. If you are convinced that the forthcoming rally will be powerful, you might choose an out-of-the-money call. If you believe a more

modest rally is due, you might opt for a call that is currently at or in the money. The option you choose also reflects your personal tolerance for risk. The deep-out-of-the-money calls are not for you if the thought of owning them gives you a stomachache.

Reason has to enter into the selection process as well. The possible results shown above for the 1300 call, for example, would require a 7.4 percent increase in cocoa futures prices in the space of about 4 weeks. If you look at a price chart, you'll see that moves of that magnitude are not extraordinary.

Example: It's mid-December. Last summer, a drought in the United States sent soybean prices to new 5-year highs. Since then, prices have come down, and you believe further declines are in store. Recent reports peg drought damage as less than originally thought. Weather in the soybean-growing areas in Brazil is excellent, and a bumper crop is expected there. Furthermore, prices have not yet reached your downside technical chart objective.

Selling soybean futures short entails more risk than you want to take, as there is still quite a bit of volatility in the market. If you're wrong and prices rally, losses could accrue quickly. You decide to buy put options instead. The following options are available:

Strike Price	*Calls*			*Puts*		
	January	*March*	*May*	*January*	*March*	*May*
625	53¼	71	86	⅛	7¾	18
650	28	52	68½	1	14	26¾
675	7¾	39	56	1¾	24	38
700	1¼	28	47	4	38	51
725	¼	19¾	38	7¾	55	67
750	⅛	14	32	14	73	83½

March looks like the optimum expiration month. The January options are too close, and the May options are pricey; the slightly-in-the-money May 700 put has a time value of $2050. March soybean futures are currently trading at $6.90 a bushel, but you believe they could drop as low as $6.30 in the next several weeks. On that basis, let's look at a table of possible results:

Put	Present Premium ($)	Premium if Futures Fall to 6.30 ($)	Gain (Loss) ($)	Result as % of Premium Paid
March 625	387.50	0	(387.50)	-100
March 650	700	1000	300	+43
March 675	1200	2250	1050	+87
March 700	1900	3500	1600	+89
March 725	2750	4750	2000	+73
March 750	3650	6000	2350	+64

Given the foregoing scenario, the March 625 put would be out of the money at expiration and would die worthless. The rest of the puts would be in the money at expiration. The one with the best potential return is the March 700.

These conclusions assume, of course, that March soybean futures decline to 6.30 by option expiration. The March 650 and the March 675 puts would also expire worthless and their entire premiums would be lost if the underlying futures price did not move below their exercise prices by the time they expire.

Notice the effect of the relatively high price volatility left over from the drought scare. Because premiums are still carrying a lot of time value, possible percentage gains are relatively modest across the board. This kind of analysis also tells you something else that's worth knowing: that the relatively low-risk, in-the-money March 700 has the highest return if the decline you expect materializes.

Expected Return

Suppose you were offered a local lottery ticket. You have two choices. One is a chance to win $10,000, the other a chance to win $5000. Each ticket costs $5.00. The ticket seller says to you, "Which one do you want?"

You really don't have enough information to answer that question intelligently. You need to know how many tickets are going to be sold in each category, because that has a direct bearing on your chance of winning.

The same reasoning can be used in evaluating any potential investment. The *expected return* of an investment is its projected return adjusted

for the probability that the result will occur. A 20 percent probability that you will make a $5000 profit has an expected return of $1000 (.20 × $5000 = $1000). A 5 percent chance at $10,000 has an expected return of only $500 (.05 × $10,000 = $500). The increase in the prize is more than offset by the decrease in the probability of winning.

Strictly speaking, the expected return is the result you would achieve in the long run, if you made the same investment many times. Selecting the alternative with the best expected return does not guarantee that you will win this time, but it does put the odds on your side.

In the preceding two examples, we chose the option expiration month by the seat of our pants. We also selected the target futures price arbitrarily. We made no allowance for the likelihood that our target futures price would be attained. We also did not consider the many other possible combinations of exercise price, expiration month, and futures price; for example, what return we expect if we bought the May 675 put and soybean futures prices fell to $6.20.

We omitted detailed discussions of these considerations in the interest of simplicity. They would be instrumental in any actual options trading program.

Selling Options

Selling options short is an entirely different matter from buying them. If you sell an option short and do not own the underlying futures position, the sale is considered to be "uncovered." You must post option margin. You are subject to margin calls if prices move against you, and your market risk is virtually unlimited.

Uncovered short sales of options require margin, can create margin calls, and expose the seller to virtually unlimited market risk.

To take an example, suppose gold futures are trading at $380.00 an ounce and you sell one uncovered December gold 380 call for a premium of 4.20. You would receive $420. A month later, gold futures are trading at $460.00, and the call you sold is exercised. But you don't own December gold futures, so you have to buy them now.

You pay the current price of $460.00 an ounce for a long position in December gold and immediately deliver it to the call buyer to satisfy the exercise. He pays you $380.00 an ounce, the striking price. The difference is $80.00 an ounce ($460.00 – $380.00), or $8000. From that you can deduct the $420 you received when you sold the call, leaving you with a net loss of $7580.

Covered Sale

If you own the underlying futures position—for example, if you sell a silver call short and have a long position in silver futures—the sale is considered to be "covered." You need to margin the futures position, of course, but you do not need to post margin on the short call because you already have the asset (the long futures position) to deliver to the call buyer if the call is exercised. This is considered a more conservative option strategy and amenable to use by nonprofessional traders.

Suppose you bought one contract of July silver a month ago for $4.00 an ounce, and it is now trading at $4.45 an ounce. You have a profit of 45 cents an ounce. The contract size is 5000 ounces, so your profit translates to $2250. It appears that silver prices will stabilize at current levels for the next month or so. You consider selling a covered call in the hope that you can pick up the premium while you are waiting for the advance to resume.

Available silver options and their premiums are:

Strike	Calls			Puts		
Price	July	September	December	July	September	December
400	45.5	59.5	79.5	2.8	11.5	17.0
425	21.0	41.0	64.0	7.5	17.5	23.0
450	11.0	29.0	48.5	12.5	19.5	27.0
475	5.8	19.5	46.5	30.5	35.0	38.0
500	3.4	14.0	30.5	55.5	58.5	61.5

The July calls with striking prices of 400 and 425 are in the money. If you sell one of them, you will receive a big premium, but you also run the risk that the call will be exercised and your long position in silver futures will be called away. The July calls with striking prices of 475 and 500 are

far out of the money, so there's not much chance they will ever be exercised; but they don't earn you much either. For the 475, for example, you would receive 5.8 cents times 5000 ounces, or $290.

The September calls are richer, but you believe the silver rally will resume before September, and you don't want to be exposed to possible exercise for that long.

The July 450 looks like the best compromise. You would get $550 for it ($.11 × 5000 ounces). If silver prices were to edge higher and the call were exercised, you would receive $4.50 an ounce—the striking price—for your long position in silver futures. But you would also keep the premium, which would make the effective selling price for your long position in silver futures $4.66 an ounce ($4.50 + .11). That's acceptable to you.

If you sell the 450 and it expires unexercised, you would retain the premium of $550 and still have your long futures position. That's the outcome you are hoping for.

Single Strategy

The acquisition of a futures position and the simultaneous sale of a covered option can be treated as a trading strategy in itself. The goal is to earn most or all of the option premium. The futures position is taken to preclude the risk of being short an uncovered option. An example is given in the following:

Long Silver Futures/Short Silver Call

Futures			*Option*	
Buy September silver at	$4.45	July 2	Sell September silver 450 call for	29.0 cents
Sell September silver at	4.45	August 3	Buy September silver 450 call for	4.5
	$ 0			+24.5 cents

The call option you sold was slightly out of the money. The premium is therefore all time value. If the futures price stays flat, as it did in this case, the time value wastes away as the option approaches expiration. Your gain of 24.5 cents per ounce equates to $1225 before transaction costs.

If silver prices decline, your long futures position would begin to generate losses, and you would have a decision to make. You received a premium of 29 cents per ounce for the call when you sold it, or $1450. That provides a cushion. If you close out both positions when the loss on

the futures and the premium for the option (which you will have to buy back) total $1450, you will come out close to even. Below that level, losses continue to deepen and would theoretically be limited only by a silver futures price of zero.

If silver futures advance, your long position will start to earn profits. The call premium will also go up, but it will normally increase at a slower rate because (1) time value is eroding all the while and (2) for reasons we'll explain later, the option and futures prices don't move in lockstep at this level. At futures prices above $4.50, the call will be in the money and subject to exercise. Here's a snapshot of the situation:

Long Silver Futures/Short Silver Call

Futures			*Option*	
Buy September silver at	$4.45	July 2	Sell September silver 450 call for	29.0 cents
September silver at	4.90	July 21	September silver 450 call at	44.0
	+$ .45			−15.0 cents

Both positions could be closed out at this point for a gain of 30 cents an ounce. The option is well into the money now, so any further gains in futures will be fully offset by losses on the call. There is still 4 cents of time value left in the call premium; you could hang onto the covered sale in an effort to collect this, but it may not be worth it.

Exercise creates a different outcome:

Long Silver Futures/Short Silver Call

Futures			*Option*	
Buy September silver at	$4.45	July 2	Sell September silver 450 call for	29.0 cents
Sold September silver for	4.50	July 22	Call is exercised	
	+$ .05			+29.0 cents

In this event, your gain is 34 cents. You don't have to wait to pick up the last 4 cents of time value. The entire premium is yours immediately upon exercise.

As the preceding scenarios demonstrate, the sale of a covered call is not a neutral strategy. Gains are best when futures prices stay flat or ad-

vance. A decline in futures prices begins to eat into potential profits and could lead to involuntary closing of the two positions, or worse. The sale of a covered put against a short futures position would similarly fare better in a moderately bearish environment.

The examples here have been kept simple. There are many other considerations. Although we have omitted commissions to keep matters uncomplicated, they are not negligible, particularly for the option transactions. Proper selection of which option to sell should include a comparison of the expected returns for each striking price and maturity month. All of the examples assume that there will be no trading halts or limit moves that would prevent a trader from executing the transactions.

Environment

The preceding examples demonstrate the environment option traders seek. If buyers want options on high-flying futures, sellers of options want the underlying futures market to go to sleep. Most sellers of options do so for only one reason: to earn the premium. Risk is least if the option is simply out of the money when it expires.

For a full description of the profits and pitfalls in the sale of covered and uncovered options, the book by Lawrence G. McMillan, listed at the end of this chapter, is especially readable.

OPTION SPREADS

So far we have talked only about net positions in options; that is, the buying or selling of calls or puts. It is also possible to establish spread positions with options. A call spread comprises a long position in one call option and a short position in a different call option. A put spread comprises a long position in one put option and a short position in a different put option. In each spread, the commodity underlying the options is the same.

> *Option spreads cost less than a net position because of the premium received for the option sold. In return, the spreader accepts a cap on the maximum profit he can earn.*

The number of possible spreading strategies with options is legion. Some are very complex. They have names like "strangle," "condor," and

"butterfly." The two most popular spreads (and, not coincidentally, the two that are perhaps easiest to understand) are (1) a bullish spread constructed of two calls and (2) a bearish spread constructed of two puts. These are the only spreads we will discuss.

Bullish Call Spread

As you might surmise, a bullish call spread is established when the underlying futures price is expected to advance. The call with the lower striking price (higher premium) is bought, and the call with the higher striking price (lower premium) is sold. The two opening transactions therefore create a debit, requiring that some cash be put up; that cash is the spreader's maximum market risk.

In a bullish call spread, the spreader's risk is limited to the cash put up on the opening transaction.

The process is easier to see in an actual example. Let's say that you are mildly bullish on sugar. The time is early May, and the nearby July sugar No. 11 is trading around 8 cents a pound. The following options are available:

Strike Price	*Calls*			*Puts*		
	July	*October*	*December*	*July*	*October*	*December*
7.50	0.84	1.17	—	0.06	0.21	—
8.00	0.51	0.86	1.07	0.18	0.40	0.48
8.50	0.26	0.61	—	0.47	0.64	—
9.00	0.14	0.45	0.66	0.82	0.99	1.07
9.50	0.08	0.32	—	1.27	1.36	—
10.00	0.05	0.25	0.39	1.76	1.79	1.80

You put on a bullish call spread by buying one July sugar 8.00 call and simultaneously selling one July sugar 8.50 call. You pay a premium of .51 (cents per pound) for the July 8.00 call and receive a premium of .26 for the July 8.50 call. Your opening debit is therefore (.51 – .26 =) .25 cents a pound. If you multiply $.0025 times the contract size of 112,000 pounds, you get $280. That is the amount of cash you have to come up with to put on the spread (we're ignoring commissions), and that is also the most you can lose.

Your maximum gain in the spread is the difference in the two striking prices, which is .50 cents per pound; .50 times the contract size of 112,000 pounds equals $560. However, you would have to deduct the $280 cash you originally put up, so the most you can net out is $280.

To get a clearer picture of how it works, let's track this spread through three possible outcomes at option expiration: maximum gain, maximum loss, and somewhere in between.

If sugar futures advance, you start to earn profits. That's why this is called a bullish spread. If sugar prices go to 9.00, as in this first outcome, you would earn the most you can from the spread: .25 cents per pound, or $280. No matter how high sugar futures climb, you will never earn more than $280 because the two premiums will go up together, and what you gain on the long position in the July 8.00 you will lose on the short position in the July 8.50. Following is the first scenario.

Bullish Call Spread

BOUGHT JULY SUGAR 8.00 CALL AT .51
SOLD JULY SUGAR 8.50 CALL AT .26

	July 8.00 Call		*July 8.50 Call*	
July sugar trading at 8.00	Bought at	.51	Sold at	.26
Outcome No. 1				
July sugar climbs to 9.00	Sold at	1.00	Bought at	.50
		+.49		–.24

Net gain = .25

Now let's look at what happens if prices fall:

	July 8.00 Call		*July 8.50 Call*	
July sugar trading at 8.00	Bought at	.51	Sold at	.26
Outcome No. 2				
July sugar falls to 7.90	Expires worthless	−.51	Expires worthless	+.26
	Net loss = .25			

In this case, both options are out of the money and expire worthless. You are left with the debit in your opening transaction. No matter how far sugar prices go down, that is the most you can lose, because the two options will still expire unexercised.

If the sugar market stays relatively flat, results from the spread will be somewhere between the maximum gain and maximum loss:

	July 8.00 Call		*July 8.50 Call*	
July sugar trading at 8.00	Bought at	.51	Sold at	.26
Outcome No. 3				
July sugar is at 8.17	Sold at	.17	Expires worthless	
		−.34		+.26
	Net loss = .08			

In this outcome, the 8.50 call is out of the money and expires worthless. The 8.00 call has a bit of intrinsic value left, so part of its original cost can be recovered by selling it. The resulting loss in the spread is .08 cents per pound, or $89.60 ($.0008 × 112,000).

You can glean from the above examples that the break-even point for the spread must be somewhere above 8.17. In fact, it is 8.25, at which point the spreader would just get back the $280 cash he put up when he established the spread:

	July 8.00 Call		*July 8.50 Call*	
July sugar trading at 8.00	Bought at	.51	Sold at	.26
Outcome No. 4				
July sugar is at 8.25	Sold at	.25	Expires worthless	
		−.26		+.26
	Net loss = 0			

You can also see that the two striking prices define the playing field. The bullish call spread gains the maximum if futures are anywhere above the higher striking price at option expiration; it loses the maximum if futures prices are anywhere below the lower striking price at option expiration.

There's one other possible outcome: If the call you sold goes into the money, it could be exercised by someone who wants to own a long futures position in July sugar. That would put an end to the spread and generate some unwanted commissions, but it would not force you into the sugar futures market. You could obtain the long futures position you need by exercising the call you bought.

Bearish Put Spread

It's mid-April. You've been following the cattle market closely, and you expect futures prices to drift lower over the next several weeks. Right now June cattle futures are trading around 71.00 cents per pound. You'd like to take a bearish position but don't want the risk of being outright short. You look into the possibility of a bearish put spread in cattle options.

The following table shows the cattle options available:

Strike Price	Calls			Puts		
	June	August	October	June	August	October
68	3.80	2.10	2.45	0.20	1.85	2.65
70	2.12	1.20	1.65	0.52	2.92	3.80
72	0.85	0.60	1.05	1.25	4.35	5.15
74	0.25	0.32	0.62	2.65	6.00	—
76	0.05	0.15	0.37	4.45	—	—

You put on a bearish put spread by selling the June cattle 70 put and buying the June cattle 72 put. You pay 1.25 (cents per pound) for the June 72 and receive .52 for the June 70, creating an opening debit of .73 (1.25 – .52). That translates to $292.00 ($.0073 × 40,000 pounds); that's what it costs you to put on the spread, and that is the most you can lose in it.

The most you can make in the spread is the difference between the two striking prices (2.00 cents). If you subtract from that what the spread cost you (.73), you get 1.27 cents per pound as the maximum possible gain. That's $508 ($.0127 × 40,000 pounds).

Notice that the balance between risk and reward is better in this spread than it was in the sugar spread. In sugar, we risked $280 to make $280. In the cattle spread we are risking $292 to make $508.

To get a better idea of how a bearish put spread works, let's once again look at each outcome:

Bearish Put Spread

BOUGHT JUNE CATTLE 72 PUT FOR 1.25
SOLD JUNE CATTLE 70 PUT FOR .52

	June 72 Put		*June 70 Put*	
June cattle trading at 71.00	Bought at	1.25	Sold at	.52
Outcome No. 1				
June cattle falls to 69.00	Sold at	3.00	Bought at	1.00
		+1.75		−.48

Net gain = 1.27

The bearish put spread delivers its maximum gain, as you might expect, when the underlying futures prices decline. No matter how far down cattle prices go, the gain in the spread will never exceed 1.27 cents per pound, however, because the growing pluses on the June 72 side will be offset by the growing minuses on the June 70 side.

If cattle prices advance after the bearish put spread is established, losses start to accrue; the loss reaches its maximum when June cattle prices surpass 72, the higher striking price, as shown in the following:

Bearish Put Spread

BOUGHT JUNE CATTLE 72 PUT FOR 1.25
SOLD JUNE CATTLE 70 PUT FOR .52

	June 72 Put		*June 70 Put*	
June cattle trading at 71.00	Bought at	1.25	Sold at	.52
Outcome No. 2				
June cattle rallies to 73.00	Expires worthless		Expires worthless	
		−1.25		+.52

Net loss = .73

The loss remains at .73 cents per pound ($292.00) no matter how far cattle futures go up because at any level above 72.00, both options

will still expire worthless, and the spreader will be left with his original debit.

A June cattle price somewhere between the two striking prices at option expiration will return a modest degree of loss or gain. The break-even point here is a June cattle futures price of 71.27 cents per pound, as shown next.

Bearish Put Spread

BOUGHT JUNE CATTLE 72 PUT FOR 1.25
SOLD JUNE CATTLE 70 PUT FOR .52

	June 72 Put		*June 70 Put*	
June cattle trading at 71.00	Bought at	1.25	Sold at	.52
Outcome No. 3				
June cattle is at 71.27	Sold at	.73	Expires worthless	
		−.52		+.52

Net gain or loss = 0

The June 72 put is in the money by .73 and thus can be sold to recover some of its original cost. The final result from the June 72 transactions exactly offsets the original cost of the June 70, making the spread a wash. The focal point is 71.27. As the ending June cattle price moves below that level, small gains begin to accrue. Above 71.27, losses begin.

Although we haven't mentioned it before, this spread is technically known as a bearish *vertical* spread; the one for sugar was a bullish *vertical* spread. The name derives from the fact that the maturity months are the same for both options, so they appear in the same vertical column in a newspaper table.

There are also diagonal spreads, horizontal spreads, and many others. If the subject intrigues you, the McMillan book mentioned earlier is an excellent source.

A Word about Commissions

There are many firms selling options to public customers. They range in size from major futures commission merchants to very small firms who deal only in options. Their commission rates also vary widely. The margin for profit in option spreads is not great. As we stated earlier, the option spreader accepts a limited gain in return for a limited risk. Commission rates that are unusually high may absorb most or all of this potential gain, making the spread transaction futile.

HEDGING WITH OPTIONS

Greek letters are used to identify various aspects of option behavior. There are several, but we will mention only one—delta—because that is the one you hear most often. Delta is a decimal that stands for an option's reaction to a change in the futures price. If the option premium goes up 1 when the futures price goes up 1, the delta is 1.00. If the option goes up .47 when the futures price goes up 1, the option's delta is .47.

It follows, then, that in-the-money options have high deltas; out-of-the-money options have low deltas.

When we were talking about out-of-the-money options, we said that one of the problems with buying them is that the underlying futures price has to move a long way before the option's premium reacts very much. Another way of saying that is: The option has a very low delta. By the same token, an option that is deep into the money will have a delta approaching 1; the option premium will change virtually dollar for dollar with changes in the futures price. An option that is at the money will normally have a delta of about .50.

Option Hedge Example

You have probably deduced that a put option would make a good short hedge. Calls may likewise be used as long hedges. There would never be a margin call. The hedger's risk is limited to the premium paid and is fully known at the outset. Except for a fractional loss in time value as the weeks pass, the option provides the same degree of price protection as the futures hedge.

If it is to serve as a hedge, the option's premium must change when the price of the underlying asset changes. In other words, the option must have a high delta (be in the money). If the option premium doesn't change when the price of the underlying asset changes, the hedge offers no protection.

The greatest advantage of an option hedge over a futures hedge occurs when the hedge was, in hindsight, not really needed. For example, let's assume that your company manufactures copper tubing for industrial use. You have enough space to keep 150,000 pounds of copper metal on hand, which is enough for 2 months' production of tubing.

Your chief financial officer tells you that signs point to much higher copper prices in the next 6 months and recommends that you buy copper ahead now. Because you don't have the facilities to store the additional metal, you buy copper futures, thereby—except for changes in the basis—"locking in" today's cash price for the metal you will buy later.

You could have bought call options on copper futures instead. If the options are in the money, their premiums will move virtually in tandem with the price of the underlying futures, and losses on the cash side would be offset by gains in the call premiums.

A numerical comparison will make the differences between the two approaches apparent:

Time	*Cash Market*	*Futures*	*Calls*
May 1	Copper 102.50 per pound	Buy 10 December copper at 104.30	Buy 10 December copper 100 at 8.50

Following is a comparison of the three possible outcomes from each transaction:

Outcome No. 1: As Expected, Copper Prices Rise

Time	*Cash Copper*	*December Futures*	*December Copper 100 Call*
May 1	102.50 cents/pound	Buy 10 at 104.30	Buy 10 at 8.50
Later	118.80 cents/pound	Sell at 120.60	Sell at 20.80
	+16.30	+16.30	+12.30

Cash copper prices went up 16.30 cents per pound. Because there was no change in the basis, futures gained the same amount. The call options did not quite keep pace, because in the interim they lost 4 cents in time value. In retrospect, futures would have provided a better hedge.

Outcome No. 2: Copper Prices Unexpectedly Decline Sharply

Time	*Cash Copper*	*December Futures*	*December Copper 100 Call*
May 1	102.50 cents/pound	Buy 10 at 104.30	Buy 10 at 8.50
Later	89.75 cents/pound	Sell at 91.55	Expire worthless
	–12.75	–12.75	–8.50

Cash copper prices fell from 102.50 to 89.75, a drop of 12.75 cents. Because there was no change in the basis, futures prices also fell 12.75

cents. The loss on the long futures position thus fully offset the lower cash price, negating the potential windfall gain. The option, however, lost only 8.50 cents, as zero was as far down as it could go. Below that, further windfall gains (in the form of lower cash copper options) were no longer offset.

In this second outcome, the effective cost of the cash copper with the futures hedge is 102.50 cents per pound. With the option hedge, the effective cost of the cash copper is the actual cost of the metal (89.75) plus the money lost on the option (8.50), or a total 98.25 cents per pound. The option was the better hedge by 4.25 cents a pound.

Another relative benefit: Falling prices would have triggered margin calls in the long futures position. There is never a margin call in a long option position.

Outcome No. 3: Copper Prices Don't Change

Time	*Cash Copper*	*December Futures*	*December Copper 100 Call*
May 1	102.50 cents/pound	Buy 10 at 104.30	Buy 10 at 8.50
Later	102.50 cents/pound	Sell at 104.30	Sell at 3.00
	0	0	–5.50

If cash copper prices stay flat, you can sell the futures for what you paid and break even. The option, however, would have lost some time value as the weeks passed. If you were able to sell it for only 3.00, say, you would sustain a loss of 5.50 cents per pound (8.50 – 3.00). Futures would be a better hedge in this instance.

An option hedge is more effective than a futures hedge when cash prices move sharply in the direction favorable to the hedger.

There's a rough rule in all this:

A futures hedge promises to be more effective if cash prices remain unchanged or move in an adverse direction. An option hedge promises to be more effective if cash prices move sharply in a favorable direction.

Although we have only scratched the surface, this is all we are going to say about hedging with options. For further information on hedging and other strategies for these versatile new trading vehicles, please refer to the following suggested reading list.

SUGGESTED READING

McMillan on Options, Lawrence G. McMillan. Wiley, New York, 1996.

Option Strategies, Courtney Smith. New York Institute of Finance, New York, 1996.

Chapter 15

Rules and Regulations

It would take both hands to pick up the books of rules and regulations surrounding futures trading. Most of the regulations are grist for lawyers. But there are some rules that you should be aware of, as they could one day concern you.

BROKER QUALIFICATIONS

The person most people refer to as their "commodity broker" is known technically as an *Associated Person*. He works for a brokerage firm, takes your phone calls, places your orders, reports back to you when the order is filled, and generally handles your trading account. Before he can conduct public business, he is required to demonstrate his knowledge of the field by passing the National Commodity Futures Examination. he must also be registered with the Commodity Futures Trading Commission and be a member of the National Futures Association, which conducts a check on his background.

DISCRETIONARY ACCOUNTS

Some customers give their brokers limited power of attorney to trade the customer's account entirely at the broker's discretion, without obtaining the customer's advance approval for trades. This authority must be given to the broker in writing. By law, a broker must have 2 years experience as a broker before he can accept discretionary authority over a futures or options trading account. He must also obtain the signature of his supervisor on each discretionary trade before sending it to the trading floor for execution.

OPENING AN ACCOUNT

A customer opening a new commodity (or options) account will be asked to fill out and sign several forms. The main purposes of these forms are to inform the customer of the risks associated with futures trading; to determine the customer's net worth and whether he is financially suited to futures trading; and to give the brokerage firm advance authority to transfer the customer's funds within the firm or to close out the customer's positions if necessary to meet a margin call in the customer's futures account.

Of these, the last may need explanation. If you remember from our earlier discussion, original margin to support an open futures position is paid by the customer to the brokerage firm and by the brokerage firm to the clearinghouse. Additional margin is called for when the customer's equity falls below a certain level.

The brokerage firm has to meet its margin calls regardless of whether the customer meets his. The authority to close out positions or transfer funds is an emergency measure designed to protect the brokerage firm from having to absorb the customer's losses. It is used as a last resort when the firm has for some reason been unable to obtain the necessary additional margin from the customer.

ERRORS

Mistakes are unusual, but they do happen. Stop orders get placed at the wrong levels. An intended buy order gets entered as an order to sell. A broker forgets to advise his customer that an order was filled.

There are two broad principles that govern mistakes in trading. The first is that the transaction made between the floor brokers on the exchange trading floor stands. Any adjustments will be made elsewhere. The second is that any loss arising from a broker's trading mistake is taken by the futures commission merchant (FCM) or the broker personally; any windfall gains that might come out of the error belong to the customer.

We are talking here about relatively minor adjustments. If the amount involved is large, it is possible that the customer will get into the established processes for hearing and judging grievances. These are discussed in another paragraph.

HANDLING YOUR MONEY

Funds held in your name by a brokerage firm (FCM) are required to be segregated from the firm's money and separately accounted for. This segregation is intended to prevent the use of your money by another customer or the firm itself. Customer funds held by a brokerage firm in excess of those needed to fulfill margin requirements may be invested by the firm in interest-bearing obligations of the United States. Interest earned on these investments flows to the brokerage firm.

RISK DISCLOSURE

When you first open a futures or options account, you will be asked by your broker to read and sign a risk disclosure document. The purpose of the document is to advise you of the risk of loss inherent in futures and options trading and to alert you to the possibility that such trading might not be financially suitable for you. It doesn't mention all the pitfalls but is just a warning.

REPORTS

A great deal of money moves by word of mouth in the futures markets. You give your order to your broker verbally, and he reports its execution back to you the same way. Transactions worth hundreds of thousands of dollars are consummated in the trading pits with the wave of a hand.

Written confirmation of each futures trade is required to be made to you by the following business day. As a practical matter, the notice will not likely arrive in your mailbox until a day or two after that. When you get it, check it over to make sure the numbers are correct. You will also receive a monthly statement from the FCM carrying your account. It will show current open positions, net profit or loss from positions closed during the reporting period, and the equity in your account. You should compare these data with your own records also, to make sure that they jibe.

REPARATIONS

If you believe you have been wronged by a commodity professional and are unable to settle the matter with your broker or his firm, there are two other avenues open to you. The Commodity Futures Trading Commission (CFTC) has a reparations procedure to settle disputes over money damages between private parties. A complaint must be filed with the CFTC within 2 years of the incident causing the complaint. The complaint is heard before an administrative law judge, and his ruling may be appealed by either party. If you receive an award and it is not paid within 30 days, the CFTC can suspend the registration of the commodity professional or prohibit him from trading in all contract markets.

The National Futures Association (NFA) also has grievance procedures. Members of NFA are *required* to submit your claim to arbitration if you request it. Arbitration proceedings are informal and are conducted in a location convenient to both parties; parties may be represented by counsel if they desire. Claims for any amount may be heard, and the ruling of the arbitrator or arbitration panel cannot be appealed.

POSITION LIMITS

These are speculative position limits on most commodities. These limits describe the maximum number of open futures contracts that may be owned or controlled by one person at one time. Bona fide hedges are exempt from speculative limits. The CFTC sets the limits on several of the agricultural markets; the exchanges themselves set the limits on the rest. The limits are quite large. In soybeans, for example, the speculative position limit for all delivery months combined is 21.5 million bushels.

An FCM must advise the CFTC when one of its speculative accounts exceeds the limit and must continue to advise the CFTC daily until the customer's position falls back below the limit.

FLOOR BROKERS

A floor broker cannot execute a trade for his own account while he holds the same trade for a customer's account. This prevents him from taking a small position ahead of a large order that he knows will move the market favorably.

Unless you consent, a floor broker cannot fill your order by selling to you *from* his own account or buying from you *for* his own account.

He cannot prearrange trades to avoid making them by open outcry, except under special circumstances approved by the CFTC and the exchange.

A floor broker is not permitted to disclose orders that he holds. This stops him from tipping off other floor brokers, who could benefit by buying or selling ahead of a large order and later splitting the gains with the broker who had held the order.

GUARANTEES

It is against the law for a commodity professional to say that he can guarantee you against loss in any commodity transaction. Except for joint accounts, pools, or partnerships where your written permission is given, it is also illegal for him to share in either the profits or losses from your futures transactions.

ATTORNEYS

Commodity law is highly specialized. Today, more and more law firms are establishing separate departments to deal with this rapidly growing field. Law firms that are members of the Futures Industry Association would be presumed to have an interest. Information on these firms may be obtained directly by calling or writing the Futures Industry Association at 2001 Pennsylvania Ave. NW (Suite 600), Washington, DC 20006-1807. Telephone: 202-466-5460.

TAXES

You should seek professional tax advice if you are going to be involved with futures or options, as the rules are ever changing. However, the following general guidelines apply.

As was mentioned earlier in the book, futures contracts outstanding at the end of the year are marked to the market, and income taxes are paid on unrealized gains net of unrealized losses. The effect is as if each futures contract were sold for fair market value on the last business day. The resulting gains or losses are considered 40 percent short-term capital gain and 60 percent long-term capital gain, although there is presently no difference in the tax rates for long- and short-term capital gains. All capital gains are taxed as ordinary income.

Hedges are exempt from the mark-to-market rule. A hedge is defined as a normal business transaction intended to reduce the risk of change in the cash price of property or the risk of changes in interest rates or foreign currency exchange rates.

Most gains or losses from hedging transactions are ordinary. Hedges to protect inventory, receivables, or other assets in the normal course of business—for example, a miller hedging in wheat futures—create ordinary income or loss. However, it is possible in unusual circumstances for a hedge to create capital gains or losses. A possible example would be a foreign currency futures hedge taken to protect an investment in an overseas subsidiary.

SUGGESTED READING

Futures and Options Course. Futures Industry Association, Washington, DC, 1995.

16

Contracts in Brief

This chapter presents basic information on the major futures markets. The markets are presented alphabetically by commodity group; for example, currencies, foods and fibers, grains, and so on. Within each group the individual markets are described. Included are technical data on the futures contract itself; information about where the actual commodity is produced, who uses it, and what causes its price to change; and a listing of sources for current supply and demand information.

The following abbreviations are used to identify the major exchange on which each futures contract is traded:

CBOT—Chicago Board of Trade

COMEX—Commodity Exchange, a division of the New York Mercantile Exchange

CME—Chicago Mercantile Exchange

CSCE—Coffee, Sugar & Cocoa Exchange

FINEX—Financial Instrument Exchange, a division of the New York Cotton Exchange

IMM—International Monetary Market, a division of the Chicago Mercantile Exchange

IOM—Index and Option Market of the Chicago Mercantile Exchange

KCBT—Kansas City Board of Trade

MGE—Minneapolis Grain Exchange

NYCE—New York Cotton Exchange

NYFE—New York Futures Exchange, a subsidiary of the New York Cotton Exchange

NYME—New York Mercantile Exchange

Put and call options are available on all futures contracts except where indicated.

CURRENCIES

Futures contracts are traded on the British pound, deutsche mark, Japanese yen, Swiss franc, Australian dollar, Mexican peso, and Canadian dollar. All are traded on the International Monetary Market.

Factors affecting the prices of foreign a currencies on world markets include relative rates of inflation between nations, balance of trade, interest rates, government intervention, and economic growth rate.

A high inflation rate creates distrust of a currency. A nation experiencing severe price inflation will eventually suffer a weakening of its currency in relation to that of its world neighbors. If a nation is buying more than it sells, it has an "unfavorable" balance of trade. Capital is flowing out. As a result, the demand for its currency diminishes relative to the currencies of its customers, and that causes its value to decline.

Prices for a foreign currency also reflect comparative interest rates. If a nation's interest rates are high, foreigners will invest their money there. This creates demand for the currency and will cause its value to rise relative to the currencies of nations where lower interest rates attract fewer foreign investors. A country undergoing robust economic growth similarly attracts foreign investment.

Most government actions today are taken in the name of stabilizing foreign currency relationships. This does not rule out the possibility that they may one day exercise their greater powers to impose quotas, tariffs, embargos, or take other actions that would have a significant and immediate effect on foreign currency value.

There is also some seasonality to the demand for some foreign currencies, caused by the ebb and flow of tourist activity and imports or exports of hard goods.

Where to Find More Information

Foreign currency prices are affected in some measure by almost every economic happening. Broad sources of information on the relationship between the U.S. dollar and foreign currencies would include the U.S. Department of the Treasury and the U.S. Department of Commerce in Washington, DC.

In addition, there are three informative periodicals in the field: *The Economist* (111 W. 57th Street, New York, NY 10019); *Financial Times of London* (75 Rockefeller Plaza, New York, NY 10019); and *Euromoney* (14 Finbury Circus, London EC2, England).

A book that would be helpful is *Currency Forecasting,* by Michael R. Rosenberg (New York Institute of Finance, 1995).

Delivery months: March, June, September, December

Price in dollars and cents per Australian dollar

Exchange: CME

Minimum tick: $.0001 = $10.00

Contract size: $100,000 (Aus)

The Australian economy is prosperous and well diversified. The broad goal of Australia's fiscal policy is full employment and stable prices. This combination, plus abundant resources and a sound currency, has enabled relatively fast economic growth, and the Australian standard of living is comparable to that of other advanced nations.

Some 65 percent of Australia's land is arable. A wide range of crops is grown, including wheat, barley, oats, rice, and sugar cane. Of that group, wheat is the most important, contributing 20 percent or more to total rural export income.

Australia has long been the world's largest producer and exporter of wool. Over 90 percent of the "clip" is sent overseas in raw form (greasy wool) for processing elsewhere. Other agricultural exports include barley, sugar cane, and beef.

Mining is equally significant in earning export revenues. Australian iron ore, coal, aluminum, and copper also find their way into the holds of departing ships.

Japan is Australia's largest trading partner, accounting for 24 percent of the two-way trade.

[redacted]

Delivery months: March, June, September, December

Price in dollars and cents per British pound

Exchange: CME

Minimum tick: $.0002 = $12.50

Contract size: 62,500 pounds

Great Britain is a major trading country and an international center for finance and business. London is the heart of the Eurodollar market. The Bank of England is the central bank and is responsible for issuing banknotes and managing the national debt. For the past several years, Great Britain has had an "unfavorable" balance of trade; that is, it has imported more than it has sold. The pound has been allowed to float in value since June 1972. Futures prices have ranged widely, from just over $1.00 to $2.60.

[redacted]

Delivery months: March, June, September, December

Price in dollars and cents per Canadian dollar

Exchange: CME

Minimum tick: $.0001 = $10.00

Contract size: $100,000 (Can)

Canada is one of the world's leading trading nations. A major exporter of agricultural products, it is also the leader (in terms of value) in seafood exports. The nation is rich in minerals, leading all others in the production of zinc and nickel. The net flow of capital between Canada and the United States has been southerly. In the 1980s, Canadian-owned investments in the United States increased 68 percent; U.S. investments in Canada during the same period rose only 30 percent.

The Canadian dollar fell from a premium to a discount to the U.S. dollar in the 1970s and has ranged from 69 cents (U.S.) to 89 cents in the past 15 years.

[redacted]

Delivery months: March, June, September, December

Price in cents per deutsche mark

Exchange: CME

Minimum tick: $.0001 = $12.50

Contract size: 125,000 marks

Germany is one of the world's leading economic powers. The currency of this reunited nation remains the deutsche mark; it is issued by the Deutsche Bundesbank (German Federal Bank), which is also responsible for its stability both at home and on international markets. The German economy is dominated by industry, and foreign trade plays an important role. Deutsche mark futures prices have ranged from a low of 28 cents to a high of 75 cents since trading began in 1972.

Delivery months: March, June, September, December	
Price in cents per yen	Exchange: CME
Minimum tick: $.000001 = $12.50	Contract size: 12,500,000 yen

Japan's economy achieved a very high growth rate in the years after World War II. It currently ranks second in the world (after the United States) in industrial production. Some 70 percent of the nation is forested, and the nation is self-sufficient only in rice. Industry therefore depends heavily on import of raw materials to produce motor vehicles, steel, machinery, chemicals, and electrical equipment.

Japan's strong industrial base and huge trade surplus have thrust the yen into the financial world limelight in the past 15 years. This condition has been moderated in recent years by a slowing of economic growth within the country and by pressure from other nations for Japan to take steps to reduce its trade surplus.

Delivery months: March, June, September, December	
Price in dollars and cents per Mexican peso	Exchange: CME
Minimum tick: $.0025 = $12.50	Contract size: 500,000 new pesos

Since 1940, the Mexican economy has expanded at an average annual rate of 6 percent. During the 1950s and early 1960s, agriculture fueled the growth. Since then, agricultural production has slipped, while the industrial sector has increased almost 40 percent. The recent North American Free Trade Agreement (NAFTA) should encourage continued expansion.

Field crops grown in Mexico include cotton, wheat, and corn (maize). Corn is the most important, with about half of the nation's cropland devoted to it. Mexico is self-sufficient in beef, pork, sugar, and poultry. There is some mining of gold, silver, and copper, with silver predominating.

Tourism is important and is viewed as having enormous growth potential. It now accounts for about 10 percent of the total value of foreign earnings.

Petroleum is the centerpiece of the Mexican economy. As late as 1974, Mexico was a net importer of petroleum. New discoveries, deeper exploratory wells, and nationalization of the petroleum industry have brought new oil wealth, which has the potential of financing further broad economic development.

Commodity: Swiss Franc	
Delivery months: March, June, September, December	
Price in cents per Swiss franc	Exchange: CME
Minimum tick: $.0001 = $12.50	Contract size: 125,000 francs

Switzerland's well-ordered economy reflects an extended period of peace. With no important natural resources except water power, the Swiss economy is based on diversified industry and commerce and depends heavily on foreign labor from neighboring countries. Its perennial deficit in its foreign trade account is more than offset by surpluses in banking, insurance, and tourism.

Futures prices for the Swiss franc have ranged from 47 cents to 90 cents (U.S.) over the past 15 years, with the high set in the fall of 1995.

ENERGY

In terms of value of the product, petroleum is the largest business in the world. Crude oil is the most active futures contract traded on a physical commodity.

Petroleum futures markets were introduced in the mid-1970s, in response to the sudden price volatility caused by Organization of Petroleum Exporting Countries' (OPEC) oil embargoes in 1973 and 1974. Crude oil is the basis for all petroleum products. Once pumped to the surface, water and gas are removed, and the crude is graded for density and sulfur content. It is then transported to refining centers.

Futures are traded on crude oil, heating oil No. 2, unleaded gasoline, and natural gas.

Where to Find More Information

The New York Mercantile Exchange publishes an excellent quarterly magazine, *Energy in the News*. It contains current articles on pricing and production of petroleum, futures trading, and industry background. For further information, contact the marketing department of the exchange at 4 World Trade Center, New York, NY 10048 (telephone: 212-748-3003).

A monthly newsletter published by the American Petroleum Institute (1120 L Street NW, Washington, DC 20005) provides analysis of recent developments in the production, imports, refining, and inventories of petroleum and petroleum products.

International Petroleum Statistics Report, available from the U.S. Government Printing Office (Washington, DC 20402), presents data on international oil production, consumption, imports, exports, and stocks. *Petroleum Marketing Monthly,* from the same source, provides current information about a variety of petroleum products.

A source for background information is the *International Petroleum Encyclopedia,* published by the Penn-Well Publishing Company, Tulsa, OK. There are several periodicals in the field. *Oil and Gas Journal* is also published by Penn-Well. *Platts' Oilgram* is put out by McGraw-Hill, New York. The Department of Energy (National Energy Information Center, EI231, Washington, DC 20585) publishes the *Monthly Energy Review,* and *Weekly Petroleum Status Report.*

Delivery months: 18 consecutive months	
Price in dollars and cents per barrel	Exchange: NYME
Minimum tick: 1 cent = $10.00	Contract size: 1,000 barrels

Demand for crude oil derives mainly from refineries, which "crack" it into several different by-products. The most important of these are motor gasoline, heating oil, jet fuel (kerosene), diesel oil, and propane. In fact, the first three account for some 80 percent of all refinery output in the United States.

Because its demand is derived, price factors for crude oil are really those of its by-products. A series of cold winters, a significant increase in

automobile use, or a new fuel-saving wide-body airplane would all influence crude oil prices in the long run. The most visible short-term price factors are OPEC efforts to reduce production and thereby raise prices.

Cash crude oil transactions may take place at several locations around the world. In the United States, a large volume of crude oil trading occurs in Cushing, Oklahoma, and St. James, Louisiana.

Commodity: Gasoline (unleaded)	
Delivery months: 18 consecutive months	
Price in dollars and cents per gallon	Exchange: NYME
Minimum tick: $\frac{1}{100}$ cent = $4.20	Contract size: 42,000 gallons

Gasoline's principal use is as fuel for private automobiles, and its nature varies from one section of the country to another and from one season to another, to reflect driving conditions. The strongest seasonal demand is during the summer months. Prior to 1974, refiners added tetraethyl lead to their gasoline to improve octane ratings. Virtually no leaded gasoline is produced in the United States today.

The popularity of automobile travel is a major factor in the demand for gasoline. Retail gasoline prices are slow to respond to changes in its production costs. Likewise, gasoline demand is relatively inelastic; that is, even hefty increases in prices at the pump don't seem to have much effect on automobile use.

Gasoline futures are part of the "crack" spread, whereby a refiner buys crude oil futures, sells gasoline futures, and thus establishes in advance his profit margin for that part of the refining process.

Commodity: Heating Oil No. 2	
Delivery months: 18 consecutive months	
Price in dollars and cents per gallon	Exchange: NYME
Minimum tick: $\frac{1}{100}$ cent = $4.20	Contract size: 42,000 gallons

The principal use of heating oil is in furnaces to warm residential and commercial buildings. Ninety percent of heating oil supplies come from domestic refinery production; the remainder comes from imports and inventory.

There is a strong seasonal tendency in cash prices for heating oil. Stored supplies tend to build up in the fall and are depleted during the win-

ter heating season. Prices tend to firm with the arrival of frost. Increases or declines in the price of the source—crude oil—also eventually pass through to the price of heating oil.

Demand for heating oil is relatively inelastic, although consumers will lower their thermostats when prices are extremely high. Persistent high petroleum prices encourage the development and use of alternate heating means, such as electricity or natural gas.

The heating oil futures contract on the New York Mercantile Exchange calls for delivery in New York harbor. Since futures began trading in late 1978, prices have ranged from a high of $1.10 a gallon to a low of 30 cents a gallon. Heating oil futures are part of the "crack" spread, whereby a refiner buys crude oil futures, sells heating oil futures, and thus establishes in advance his profit margin for that part of the refining process.

Delivery months: 18 consecutive months	
Price in dollars and cents per MMBtu	Exchange: NYME
Minimum tick: $\frac{1}{10}$ cent per MMBtu = $10.00	Contract size: 10,000 million British thermal units (MMBtu)

Natural gas is found throughout the world. Leading producers, in order of their importance, are the United States, the Russian republics, Canada, Romania, Mexico, Italy, and Venezuela. The United States accounts for about one-fourth of world production and use.

Natural gas is formed deep within the earth by the decay of organic matter under heat and pressure from many layers of overlying rock and sediment. It is obtained by drilling. Because of its relatively high transportation cost, most natural gas (78 percent) is consumed in the country where it is produced. In the United States, it is transported to end users through a network of intra- and interstate pipelines.

As it is found, natural gas is composed of several gases and water. The natural gas delivered to your home by the local gas company has been refined to 93 percent methane, which is colorless and odorless. Sulfur compounds called mercaptans are added to create an odor to warn of gas leaks.

Natural gas is used as a fuel to produce heat and light and as a raw material in the making of antifreeze, detergents, pesticides, plastics, and other materials. The major benefits of natural gas as an energy source are

that it burns cleanly, producing low levels of emissions and pollutants, and that it is in abundant supply. Recoverable reserves in the lower 48 states are estimated to be enough for 66 years at current rates of use and production.

Natural gas accounts for about one-fourth of total energy consumption in the United States. Its use is split fairly evenly between heating homes and offices and firing industry and electric utilities. Comparative demands between the two sectors are mirror images; residential use tapers off in warm weather, while consumption by electric utilities rises sharply to satisfy the needs of air conditioners.

Before 1978, the natural gas market was largely government controlled. Prices were stable and contracts were long term. In that year, the Natural Gas Policy Act was passed, deregulating the industry. That action freed natural gas prices, opened up active competition, and set the stage for a futures market that could be used by producers, pipelines, and end users of natural gas to hedge the new price risks.

The natural gas futures contract was launched by the New York Mercantile Exchange on April 3, 1990. It found early success; open interest as of this writing is over 40,000 contracts. Prices have ranged widely, from $1.20 to $2.60 per MMBtu. Deliveries against the futures contract are made at the Sabine Pipeline Company's Henry Hub near Erath, Louisiana.

FOODS AND FIBERS

Included in the category of foods and fibers are cocoa, coffee, sugar, cotton, and orange juice. Futures contracts in the first three are traded on the Coffee, Sugar & Cocoa Exchange. Cotton and orange juice futures are traded on the New York Cotton Exchange. Both exchanges are in New York City.

The U.S. Department of Agriculture publishes current information on many of the futures markets in this category. Most reports are released by the Economic Research Service (ERS) and the National Agricultural Statistics Service (NASS). Reports are available by electronic means and in print.

The former include the Computerized Information Delivery System (CIDS), ERS AutoFAX (202-219-1107), an electronic bulletin board, e-mail, and the Internet (see Chapter 17). Not all reports are available in print, and those that are may be delayed from 3 days to 2 weeks.

For further information on USDA reports and to obtain a free listing of ERS and NASS reports and calendars of their release dates, call 1-800-

999-6779 or write to: Information Center, Room 110, 1301 New York Avenue NW, Washington, DC 20005.

Some of the futures markets in this category come under the purview of USDA's Foreign Agricultural Service (FAS). Information on FAS reports can be obtained by calling 703-487-4630.

Delivery months: March, May, July, September, December	
Price in dollars per metric ton	Exchange: CSCE
Minimum tick: $1.00 = $10.00	Contract size: 10 metric tons (22,046 pounds)

Cocoa production is centered in Africa, where the leading producer is the Ivory Coast. Cocoa is also grown in Brazil, Ghana, and Nigeria. About 75 percent of the world crop comes to harvest in the 5-month period from October to March. A smaller harvest occurs in the May–July period. The principal use of cocoa is the making of confections. The United States is the leading consumer; Germany is second.

Cocoa futures have traded in a broad range. Since 1965, prices have been as low as $500 per ton and as high as $5400 a ton, the latter an extraordinary peak reached in 1977. The International Cocoa Agreement (ICA), formed in 1980, attempted unsuccessfully to control prices by buying or selling buffer stocks. The ICA is not a price factor today but could regain minor importance.

Seasonal influences cause prices to set highs in summer and again in late fall. Prices are usually lowest in the first quarter. Real or rumored changes in supply caused by such incidents as price fixing, crop disease, hot and dry summer growing weather, or shipping disruptions have the most direct effect on price levels. However, the rugged terrain in which cocoa is grown and the fact that it is produced almost exclusively in developing nations make communications difficult. Information about the size of the crop, its welfare, and the level of stockpiles is hard to get and not always reliable.

One measure of consumption is the grinding of the processed cocoa beans to cocoa powder, which is widely reported. Over the longer term, changes in disposable income also affect the price of cocoa, as manufacturers generally respond to lower chocolate consumption by reducing the amount of chocolate in their confections.

Where to Find More Information

The Coffee, Sugar & Cocoa Exchange (4 World Trade Center, New York, NY 10048) is an excellent source for both current and background information. *Tropical Products,* published four times a year by Foreign Agricultural Service, provides information on world production and the supply and demand situation for cocoa.

Delivery months: March, May, July, September, December	
Price in dollars and cents per pound	Exchange: CSCE
Minimum tick: $^{5}/_{100}$ cent = $18.75	Contract size: 37,500 pounds in about 250 bags

Although many nations grow coffee, Brazil and Colombia are the most important producers. Brazil's main coffee harvesting season is April to September; Colombia's is October to March. The United States is the world's largest single importer of the breakfast beverage, followed closely by Europe. The most popular are the mild coffees from Colombia, and they also usually top the price list. Robusta coffee from the Ivory Coast has been growing in importance in recent years, reflecting its use for instant coffees.

Coffee is a weather market. Winter in Latin America coincides with summer in the Northern Hemisphere, and the threat of tree-damaging frost in June and July has been known to send futures prices rocketing upward. Drought has also played a part. Since 1975, futures prices have ranged from 45 cents a pound to $3.40 a pound, a swing of some 755 percent.

Other factors influencing coffee prices are the quantities of green coffee on hand, labor unrest in exporting countries that leaves coffee sitting on the dock, overt steps taken by the governments of producing countries to control coffee production and prices, and insect damage to the growing crop.

On a longer-term basis, consumer preferences are also important. Although coffee consumption has a reputation of staying high in spite of sharp price increases from time to time, there has been a long-term trend toward less coffee drinking in the United States in recent years.

Where to Find More Information

USDA publishes several sources of current information on coffee. They include *Foreign Agricultural Trade of the U.S.A.*, put out by the Economic Research Service (ERS), plus *Foreign Agriculture*. Coffee production is estimated and reported by ERS in January and August each year. Other good information sources are the literature and annual report of New York Coffee, Sugar & Cocoa Exchange, 4 World Trade Center, New York, NY 10048.

Commodity: Cotton

Delivery months: March, May, July, October, December

Price in cents per pound

Minimum tick: $\frac{1}{100}$ cent = $5.00

Exchange: NYCE

Contract size: 50,000 pounds = 100 bales

Cotton is grown in several countries, including China, India, Brazil, Pakistan, Egypt, Turkey, the United States, and the Russian republics. The United States and the former USSR have historically been the world's leading producers. Growing areas in the United States are, in order of importance, Texas, California, Mississippi, Arizona, and Arkansas. Planting starts as early as February, although the bulk of the U.S. cotton crop is planted in April. Harvesting is done mainly in October and November.

The United States is the largest cotton consumer in the world. About half of the cotton consumed in the United States is used to make apparel. The rest finds its way into sheets, pillowcases, towels, and other industrial and household uses. Cotton exports from the United States are a major factor in world markets and are highest in the first quarter. Consumption by cotton mills peaks in the fall as the new crop arrives, then tapers off toward spring.

Over the past 30 years, cotton futures prices have ranged from a low of 30 cents a pound to a high of $1.15 a pound. On a seasonal basis, spot prices for combed and cleaned cotton are usually highest in the spring. Nonseasonal factors would include the level of government stockpiles, the government loan level for cotton, and actions taken by foreign cotton producers to control prices or supplies. However, the overwhelming price determinants are the price of U.S. cotton relative to the prices of foreign

cotton and synthetic fibers; and consumer preferences, such as the continuing popularity of all-cotton denim clothing.

Where to Find More Information

USDA publishes the weekly *Cotton Market Review* and the *Cotton & Wool Situation*. USDA cotton production estimates are released monthly. The *Cotton and Wool Yearbook*, published each November, contains statistical information on domestic and world cotton production, consumption, exports, use, and prices.

Other sources comprise the *Weekly Trade Report* of the New York Cotton Exchange and monthly data published by the U.S. Census Bureau on cotton consumption and mill margins.

Commodity: Orange Juice (Frozen Concentrated)

Delivery months: January, March May, July, September, November	
Price in cents per pound	Exchange: NYCE
Minimum tick: $^5/_{100}$ cent = $7.50	Contract size: 15,000 pounds

Florida is the home of citrus in the United States, and more than 75 percent of its orange crop is processed into frozen concentrated orange juice (FCOJ). The most important harvest periods are the month of January and the period from mid-April to mid-June; the latter is when the Valencia oranges, prized for their flavor, are gathered.

FCOJ is the quintessential weather market. Temperatures below 28°F damage the oranges; three degrees less, and the trees also start to suffer. Since 1900 there have been some 35 major cold spells (26°F for 2 to 3 hours) in the Florida Orange Belt. Most freezes have occurred in December and January, but they have come as early as November and as late as March. Damage has ranged from a slight loss of fruit to the destruction of a large number of trees. Even the threat of a cold spell in growing regions can start FCOJ futures prices climbing.

Reports on the amount of FCOJ produced and shipments to food stores are released to the print and wire services each week by the Florida Citrus Processors Association (P.O. Box 780, Winter Haven, FL 33880) and are important short-term price factors. Other influences include government buying of orange juice for distribution in school lunch programs; the amount of imported fruit, mainly from Brazil, which has grown in

importance in recent years; the level of stocks in the hands of processors; and the popularity of other soft drinks and breakfast beverage substitutes.

FCOJ futures prices have at times also reacted sharply to the first official estimate of the current Florida orange crop, which is issued by USDA in October.

Where to Find More Information

USDA provides two sources of current information: reports of estimated orange production and juice yield, which are issued monthly from October through July (except November); and the *Fruit Situation Report,* issued several times a year, which covers both whole oranges and FCOJ. *Citrus Fruits* is an annual report that summarizes acreage, yield, production, use, price, and value of current and immediately previous year's crop.

Delivery months: March, May, July, October	
Price in cents per pound	Exchange: CSCE
Minimum tick: $\frac{1}{100}$ cent = $11.20	Contract size: 112,000 pounds

Many countries produce sugar. Sugar cane, grown mainly in tropical regions, is a perennial. Sugar beets, which produce an identical sweetener, thrive in more varied climes and need to be replanted each year. Cane is the predominant source.

Brazil, Cuba, India, and the former Soviet Union have been the leading producers of sugar, accounting for more than 30 percent of total world output. Major importers of sugar are the United States, Japan, the Russian republics, Italy, China, and the United Kingdom. In the United States, purchases for home use account for 25 percent of consumption. Bottlers of soft drinks, bakeries, and candy makers take the rest.

Factors affecting sugar prices include weather in growing regions, stockpiles of sugar on hand, and government actions taken to prop up prices. An International Sugar Agreement (ISA) was concluded between some of the producing nations in 1978, in an attempt to control sugar prices with quotas and stockpiling measures. It has been ineffectual.

Demand for sugar has grown consistently over the years, reflecting a growing world population and increasing standards of living in developing nations. Whether this increase in demand will continue depends in

large part on the extent of use of artificial sweeteners in soft drinks and confections.

The Coffee, Sugar & Cocoa Exchange lists two futures contracts: sugar No. 11, which is world sugar and trades actively; and sugar No. 14, which is based on the price-regulated domestic sugar market and seldom has much of a following. Only about 10 to 15 percent of the sugar produced enters the "free" world market, so relatively small changes in the supply of sugar can have a sharp impact on world sugar prices.

Where to Find More Information

USDA publications that contain information about sugar are *Foreign Agriculture,* a monthly magazine; the *Sugar & Sweetener Situation* report; and the Foreign Agriculture Circular, *Sugar, Molasses and Honey.* Domestic production of sugar cane and sugar beets is estimated and reported regularly from June to year end.

The preeminent private statistical organization is F. O. Licht, a German firm that publishes widely followed data on world sugar production and consumption. The address is: F. O. Licht, Zukerwivtschaftlicher Verlag und Markforschung (Gmbh), 23902 Ratzeburg, AM Mühlengraben 22, F. R. Germany, P.O. Box 1220. The phone number is (4541) 8892-0.

GRAINS

Active grain futures markets include corn, wheat, and oats. Though classified as oilseeds, soybeans and their by-products (soybean oil and soybean meal) are also generally included in this group. Grain futures are traded on the Chicago Board of Trade, the Kansas City Board of Trade, and the Minneapolis Grain Exchange. They are also traded on the Winnipeg (Canada) Commodity Exchange, and minicontracts are traded in the United States on the MidAmerica Commodity Exchange in Chicago. We will limit our discussion to the full-size contracts on the first three exchanges.

A USDA publication that treats all of these markets is *Agricultural Outlook.* Published monthly, it highlights developments in farming, input industries, and produce marketing, and discusses their potential impact on U.S. agriculture and consumers.

Delivery months: March, May, July, September, December	
Price in dollars and cents per bushel	Exchange: CBOT
Minimum tick: ¼ cent = $12.50	Contract size: 5,000 bushels

The United States is the world's largest corn producer. The leading states are Illinois and Iowa. Some corn is also grown in Indiana, Minnesota, and Nebraska. Corn is a summer crop, planted in the spring and harvested in the fall. Major consumers of the yellow grain are livestock, with hogs, cattle, and poultry accounting for almost 90 percent of the disappearance. The United States is also the world's largest exporter of corn, sending about 25 percent of each year's crop overseas.

Like most field crops, corn has a seasonal price pattern. Lows are set at harvest, when supplies weigh on the market. Prices tend to advance from these levels to a high in the spring, just before the new crop is planted.

Other factors influencing corn prices are the price and availability of substitute livestock feeds, which include soybean meal, milo, and wheat; the loan level and other government provisions for price or yield control; and the size of the corn crop in Argentina, Brazil, and other exporting nations. The principal price-making factor, however, is the number of poultry and livestock that comprise the market for corn.

An irregular but very potent price-making factor is weather, as was demonstrated by the 1988 crop, which rallied from $2.20 a bushel to $3.60 in the month of June on the prospect of drought. In fact, it has been said that the fate of the corn crop in the United States depends on whether it rains in the Corn Belt in June and July.

Where to Find More Information

The USDA is the best single source of supply and demand information. Publications include the weekly *Feed Market News,* monthly *Feed Outlook* (available only electronically), quarterly *Stocks in All Positions,* and an annual *Feed Situation and Outlook.* Prospective corn plantings are reported in March. Crop production is estimated and reported for four consecutive months beginning in August.

Demand for corn can also be inferred from USDA *Hogs and Pigs* reports, *Cattle on Feed* reports, and *Livestock and Meat Situation* reports, all of which show the current projected numbers of corn consumers. *Feedstuffs*, a weekly agribusiness newspaper published by Miller Publishing Company, provides timely information on factors affecting feed demand.

Commodity: **Wheat**	
Delivery months: March, May, July, September, December	
Price in cents per bushel	Exchange: CBOT
Minimum tick: ¼ cent = $12.50	Contract size: 5,000 bushels
Delivery months: March, May, July, September, December	
Price in cents per bushel	Exchange: KCBT
Minimum tick: ¼ cent = $12.50	Contract size: 5,000 bushels
Delivery months: March, May, July, September, December	
Price in cents per bushel	Exchange: MGE
Minimum tick: ¼ cent = $12.50	Contract size: 5,000 bushels

The most important wheat-producing region in the world has historically been the land occupied by the new Russian republics. The United States is second, followed at a distance by China, India, Canada, and France. Wheat production in the United States is centered in the Great Plains. The major producers are Kansas, Oklahoma, Nebraska, and Colorado.

Most wheat is winter wheat, planted in the fall and harvested in June and July. That which is planted in the spring and harvested in the fall is referred to as spring wheat.

There are three relatively active futures contracts. The most liquid is the contract on the Chicago Board of Trade; it is based on No. 2 soft red winter wheat, which is milled for making crackers, cookies, cakes, and pastries. Second in activity is the Kansas City contract; it calls for delivery of hard red winter wheat, which comprises our major wheat export. Hard red spring wheat is traded on the Minneapolis Grain Exchange; it is a high-protein grain and is often mixed with lower-protein soft wheats. Despite the disparity in their growing periods and end uses, prices in the three wheat markets do not tend to diverge greatly.

Virtually all wheat that is not exported goes into foods. It takes about 2½ bushels of wheat to produce 100 pounds of flour. However, on the rare occasions when wheat and corn prices are about the same, wheat has also been used as food for livestock and poultry.

Exports play an important role in wheat prices. The United States is the world's largest exporter, selling about half of its annual crop overseas. Major world importers of wheat include Brazil, China, Japan, Korea, and the Netherlands. The levels of wheat production in other nations also have an effect on our prices. Wheat grown in the Southern Hemisphere reaches world markets a half-year later than U.S. wheat.

Where to Find More Information

The best single source of supply and demand information is the USDA. Its *Wheat Yearbook,* released annually, presents foreign crop news, wheat stock levels, prices, and disappearance. It is updated monthly. *Grain Stocks* is a quarterly publication that shows wheat on hand and disappearance during that quarter. Prospective plantings are estimated and reported in March. There is also a weekly USDA publication, *Grain Market News,* that provides information on cash sales, wheat and flour exports, grain impoundings, exports by port and destination, and receipts and shipments of wheat.

The Foreign Agriculture Service publishes the *Weekly U.S. Export Sales Report* that covers transactions of 100,000 tons or more. *Milling and Baking News* is a commercial trade publication that contains data and commentary on the current situation in wheat from crop growing conditions to flour prices.

Delivery months: March, May, July, September, December	
Price in dollars and cents per bushel	Exchange: CBOT
Minimum tick: ¼ cent = $12.50	Contract size: 5,000 bushels

Oats are grown in Minnesota, the Dakotas, Iowa, and Wisconsin. The crop is planted in the spring and harvested in late July to early August. The United States grows about one-quarter of the world's oats and consumes virtually all of it domestically.

The principal use for oats is livestock feed. Only a fraction finds its way into oatmeal for human consumption. Farmers who grow oats keep two-thirds or more of their production to feed their own animals.

Oat prices have ranged between $1.00 and $3.00 per bushel for most of the time over the past 15 years. Prices respond to a number of influences. There has been an ongoing decline in the amount of acreage being planted to oats, which will eventually cause higher prices. Drought or crop disease that threatens supply can send prices sharply higher, as was seen in the dry summer of 1988; oats rallied to just under $4.00 a bushel, the highest price ever registered.

Other supply aspects include the cost and availability of other animal feeds, especially corn. A bushel of oats weighs about half as much as a bushel of corn; if feeding values be the same, a bushel of oats should theoretically cost about half as much as a bushel of corn. In fact, oat prices generally run about 10 percent to 15 percent below corn prices, by weight.

On the demand side, the numbers of poultry and livestock are the overriding consideration.

Where to Find More Information

The best single source of supply and demand information is the USDA. Publications include *Feed Market News* and *National Grain Stocks Summary,* both issued weekly. The regular USDA *Feed Situation* report also shows commercial stock levels and movement of oats.

Commodity: Soybeans

Delivery months: January, March, May, July, August, September, November

Price in cents per bushel

Exchange: CBOT

Minimum tick: ¼ cent = $12.50

Contract size: 5,000 bushels

The United States is the world's leading producer of soybeans, followed by Brazil and China. Soybeans vie with corn as the most important cash crop in the United States. They are grown in Illinois, Iowa, Indiana, Ohio, Missouri, and Minnesota—the Corn Belt. Soybeans are planted between mid-April and June, but they may be put in the ground somewhat later without

harmful effects and are often used as an alternate crop when weather prevents the planting of corn or cotton. The soybean harvest is usually complete by October.

Although they are often grouped with grains for discussion, beans are an oilseed. They are grown for their yield of soybean oil and soybean meal. A 60-pound bushel of soybeans will produce 47 pounds of meal, which is the driving market, and 11 pounds of oil. About two-thirds of the U.S. crop is crushed at home. The balance is exported out of the Great Lakes and Gulf ports, bound primarily for Japan and Western Europe.

There is a seasonal tendency for cash soybean prices to rise from a low around harvesttime to a peak the following spring. The supply of competing soybeans, such as those from Brazil, also affects U.S. soybean prices in world markets. Even the prices of corn and cotton have an indirect effect because corn and cotton compete with soybeans for growing space. However, the most significant factor for soybean prices is the crush margin, or the difference between the cost of the beans and the prices of their end products. If the prices for soybean meal and soybean oil are relatively high, crushers will bid for beans and drive bean prices up.

Where to Find More Information

The progress of the soybean crop is closely followed. USDA's *Prospective Plantings,* published at the end of March, provides the first clues to production prospects. In July, the final figure for planted acreage is released, and monthly crop estimates are provided from August through November. Grain stocks are reported in January, March, June, and December.

The weekly *USDA Export Sales Report* contains information on soybean export commitments and transactions. The monthly *Oil Crops Outlook* (available by electronic means only) and the annual *Oil Crops Yearbook* present statistics and projections of supply and demand for the entire soybean complex.

Data on soybean crushing, stocks, and disappearance are also provided monthly by the U.S. Census Bureau. The National Soybean Processors Association (1255 23rd Street NW, Washington, DC 20037; telephone: 202-452-8040) publishes a yearbook of trading rules relating the purchase and sale of soybeans, plus weekly and monthly statistical reports. Information on the cost and availability of these materials may be obtained by contacting the association directly.

Delivery months: January, March, May, July, August, September, October, December

Price in dollars per ton — Exchange: CBOT

Minimum tick: 10 cents = $10.00 — Contract size: 100 tons

Soybeans are crushed to obtain their oil and meal. Of the two, meal is considered the more valuable by-product; its price is also more volatile, because it cannot be stored for long.

Soybean meal is rich in protein (40 to 45 percent) and is a major ingredient in high-quality feed for hogs, cattle, and poultry in the United States. Meal in the United States is produced in some 100 processing plants. Eighty percent of the meal is consumed domestically; the remaining 20 percent is exported, mainly to Western Europe, Canada, and Japan. The most important competitors for soybean meal in the world market are fish meal and peanut meal. The former comes primarily from Peru, the latter from India.

There is some seasonality to meal prices, which tend to be lowest in the fall and to peak out in the winter when demand is heaviest.

The supply of soybean meal is determined by the amount of crushing, and that is a function of the crush margin, or the profitability of crushing beans. If beans are relatively inexpensive, crushers will continue to operate, and meal prices will fall.

Demand for meal depends on the price and availability of competing products; the level of stocks on hand; the rate of disappearance; and, most important, the number of high-protein feed-consuming animals in the United States and other nations around the world.

Where to Find More Information

The supply of soybean meal depends largely on the supply of soybeans. For information on soybean production, see page 200.

Delivery months: January, March, May, July, August, September, October, December

Price in cents per pound — Exchange: CBOT

Minimum tick: $\frac{1}{100}$ cent = $6.00 — Contract size: 60,000 pounds

The United States is the major world producer of soybean oil and accounts for 90 percent of all soybean oil exports. One 60-pound bushel of soybeans gives up 11 pounds of this golden liquid, the most important vegetable oil in world trade. Virtually all of the soybean oil produced is consumed by the food industry, where its major uses are in shortening, salad dressings, cooking oils, and margarine.

The long-range supply of soybean oil is dependent on the size of the soybean crop plus any carryover from previous seasons. The new supply can be estimated by assuming that a normal 60 percent of the new crop will be crushed. Unlike soybean meal, soybean oil stores well. About 80 percent of the soybean oil produced goes into domestic use, with 20 percent going to exports.

Because other fats and oils can be used in place of soybean oil in many products, the prices of substitutes are important. Lard, cottonseed oil, and butter prices all have an effect on domestic soybean oil demand. On a broader scale, soybean oil also competes with palm oil, coconut oil, rapeseed oil, groundnut oil, and sunflower seed oil. The most important of these have historically been the first two; however, concerns about cholesterol have reduced the demand for tropical oils. Palm oil, from Malaysia and Indonesia, is used in shortening. Coconut oil comes from the Philippines and is used primarily in candy and bakery goods.

Where to Find More Information

As with soybean meal, the supply of soybean oil is dependent on the supply of the source commodity and the extent of crushing activity. For information sources on soybean production, see page 200.

INDEXES

Indexes comprise a relatively new category of futures market. The asset underlying the futures contract is not a tangible commodity but the value of the index. Settlement is only by transfer of cash at the maturity of the futures contract.

Active futures markets currently exist in four stock indexes, a dollar index, a futures price index, and a municipal bond index.

We'll talk about the last two first.

Delivery months: each month	
Price in index points and hundredths	Exchange: CME
Minimum tick: .10 index points = $25	Contract size: $250 × GSCI

The GSCI is an index of the prices of actively traded physical commodity futures contracts. The GSCI was developed by Goldman Sachs to represent the performance of these commodities as a group. The commodities included are metals (10 percent), meats (10 percent), grains and oilseeds (20 percent), petroleum (38 percent), and food and fiber (7 percent).

The difference between the GSCI and other commodity indexes is that each commodity in the GSCI is weighted in the calculations to reflect the relative value of its world production.

The GSCI has a strong positive correlation with inflation and a strong negative correlation with bond and stock returns. These are important criteria for portfolio diversification. Academic studies have shown that by adding exposure to physical commodities, portfolio managers can increase the return of a traditional U.S. stock and bond portfolio without increasing its volatility.

GSCI futures and options made their debut on the Chicago Mercantile Exchange on July 28, 1992. As of this writing, open interest in GSCI futures stands at 15,000.

Where to Find More Information

Like all indexes, the GSCI reflects the balance of price changes among its constituent commodities: cattle, hogs, wheat, corn, soybeans, natural gas, crude oil, unleaded gasoline, heating oil, gold, silver, platinum, aluminum, copper, zinc, lead, tin, sugar, cotton, coffee, and cocoa.

A comprehensive source of information on the GSCI futures contract is the *GSCI Institutional Manual,* published by the Chicago Mercantile Exchange in 1995.

Delivery months: March, June, September, December	
Price in percentage points and 32nds	Exchange: CBOT
Minimum tick: $\frac{1}{32}$ = $31.25	Contract size: $1,000 × Index value

The municipal bond index futures contract is based on *The Bond Buyer*™ index of 40 actively traded general obligation and revenue bonds. Each bond in the index is priced daily by five brokers, and the results are used to update the index. During the settlement month of a munibond futures contract, the index is updated twice each day.

The constituency of the index is reviewed twice a month, at which time bonds may be added or deleted; however, their number remains 40. To be included, bonds must meet high standards.

Municipal bond prices respond to real or anticipated changes in long-term interest rates, to legislation affecting the tax treatment of their yields, and to investor demand. Prices are expressed in percentage points and 32nds of a percentage point. A price of 94-24, for example, stands for 94 percent of par plus $^{24}/_{32}$ of 1 percent of par, or $94,000 plus $750 = $94,750. Municipal bonds have not been exempt from the extreme volatility of interest rates in recent years.

Because of their tax status, municipal bonds trade at price premiums to bonds of similar quality whose interest payments are not tax free. Settlement is by cash only. As with other coupon futures, a conversion factor is used to standardize the bonds to an 8 percent yield.

Where to Find More Information

The home exchange is an excellent source for both current and background information on Municipal Bond Index futures. Write to Chicago Board of Trade, LaSalle at Jackson, Chicago, IL 60604. Information on the health of business in the United States may be found in two publications of the U.S. Department of Commerce, Washington, DC. They are the monthly *Survey of Current Business* and *Business Conditions Digest.*

Two helpful books are *Fed Watching and Interest Rate Projections,* by David M. Jones; and *Yield Curve Analysis,* by Livingston Douglas. Both are available from the New York Institute of Finance in New York.

Composite Index

Delivery months: March, June, September, December

Price in index points and hundredths	Exchange: NYFE
Minimum tick: .05 index points = $25.00	Contract size: $500 × Index

The New York Stock Exchange (NYSE) Composite Index includes all of the more than 1700 stocks traded on the NYSE.

The NYSE Composite Index is capitalization-weighted. This means that a high-priced stock or one with a large number of shares outstanding will have a greater influence on the index than a stock with a lower price or smaller issue.

To calculate the index, the price of each stock is first weighted according to its capitalization (current stock price times the number of shares outstanding). The arithmetic average of these weighted prices is compared to a base value of 50, which represents the average value of all the stocks on the NYSE as of December 31, 1965. A current NYSE index value of 400.00, for example, would mean that the average value of the stocks listed on the NYSE is 8 times their average value at the end of 1965. The index is recalculated from scratch each day, so the previous day's index has no effect.

Though their compositions appear to be different at first glance, the NYSE and the Standard & Poor's (S&P) 500 virtually duplicate each other in their responses to stock market price movement.

Where to Find More Information

The New York Futures Exchange (4 World Trade Center, New York, NY 10048) publishes background information as well as current data on NYSE Index futures.

[illegible]
Delivery months: March, June, September, December
Price in index points and hundredths — Exchange: CME
Minimum tick: .05 index points = $25.00 — Contract size: $500 × Index

Standard and Poor's MidCap 400 Index measures the group performance of the stocks of 400 moderately sized U.S. companies. The predominant industry groups in the index are technology (20 percent), finance (15 percent), utilities (13 percent), and consumer cyclicals (12 percent).

To be a member of the S&P MidCap 400, a stock must be traded on the New York Stock Exchange, the American Stock Exchange, or NASDAQ. Foreign companies whose stocks trade as American Depositary Receipts or American Depositary Shares are ineligible, as are mutual funds, limited partnerships, and real estate investment trusts (REITs). No stock can be a member of both the S&P 500 and the S&P 400.

Other criteria for admission to the 400 include a good liquidity/turnover ratio and a review by the Index Committee at Standard and Poor's, which takes care to ensure that the Index accurately represents the aggregate performance of middle-sized companies in the United States.

Futures contracts on the MidCap 400 began trading in February 1992. As with other index futures, settlement is by cash. Open interest in early 1997 is about 10,000.

Where to Find More Information

The Chicago Mercantile Exchange publishes a comprehensive handbook covering all of the domestic index options traded on the exchange. Titled *U.S. Equity Futures and Options,* it explains the purpose and nature of the MidCap 400. Also included are a trading calendar and a list of the individual stocks that make up the 400. Another pertinent publication available from the exchange is *S&P MidCap 400 Futures: Strategies & Opportunities.*

Delivery months: March, June, September, December	
Price in index points	Exchange: CME
Minimum tick: 5 index points = $25.00	Contract size: $5.00 × the Average

Nikkei 225 futures are based on the Nikkei 225 Stock Average, a price-weighted index of 225 actively traded Japanese stocks on the Tokyo Stock Exchange.

Japanese equity markets are highly volatile. During the past five years, the Nikkei 225 Stock Average has moved between a low of 15,000 and a high of 38,915, a swing of more than 100 percent.

Nikkei 225 futures can be used by U.S. pension funds, mutual funds, money managers, and institutional traders to protect diverse portfolios of Japanese equities against price risk. The futures contracts are dollar denominated; that is, there is no need to make any conversions between U.S. dollars and yen. Settlement is by cash.

Nikkei 225 futures and options were introduced in September 1990. Open interest is 25,000 as of this writing but has been as high as 50,000.

Where to Find More Information

An excellent handbook, *Nikkei 225 Futures and Options*, is published by the Chicago Mercantile Exchange. It shows how the average is calculated, a trading calendar, examples of hedging with the Index, a list of the individual Japanese stocks that currently comprise the Index, and illustrations of how the Nikkei 225 has correlated with other indexes since 1990.

Commodity: **NASDAQ 100 Stock Index**	
Delivery months: March, June, September, December	
Price in index points and hundredths	Exchange: CME
Minimum tick: .05 index points = $5.00	Contract size: $100 × Index

The 100 is the first index futures contract on NASDAQ stocks. Like the S&P 500, the NASDAQ 100 is capitalization weighted; that is, each stock affects the value of the Index in direct proportion to the dollar value of its shares outstanding. The Index is rebalanced annually to ensure that it remains an accurate surrogate for the NASDAQ Stock Market as a whole.

To join the Index, a stock must meet certain criteria. Only one class of stock per issuer is permitted. A stock must be listed on the NASDAQ for a minimum of 2 years before it is considered for inclusion in the Index.

The sector breakdown of the stocks in the Index is: computer 52 percent, industrials 28 percent, telecommunications 12 percent, biotechnology 7 percent, and transportation 1 percent. Though it is one-fifth the size of the S&P 500, the total value of the stocks in the NASDAQ 100 is only one-tenth the value of the larger index, reflecting the fact that the 100 contains more lower priced issues.

Like all index futures, the NASDAQ 100 can be used effectively to hedge a diverse portfolio of NASDAQ stocks. The futures contract is cash settled.

Where to Find More Information

The Chicago Mercantile Exchange is the best source for information about the NASDAQ 100 Stock Average; including how it is calculated, what stocks it contains, specific examples of how it can be used for hedging, and how its behavior relates to that of other major stock indexes.

A free NASDAQ 100 futures trading kit is available from the exchange. It includes historical NASDAQ price data software, a NASDAQ market overview, contract specifications, and a 24-page booklet featuring

strategies and insights from top traders. To get the kit, call 1-800-331-3332, or e-mail a request to **retail@cme.com.**

Delivery months: March, June, September, December	
Price in index points and hundredths	Exchange: IOM
Minimum tick: .05 index points = $25.00	Contract size: $500 × Index

The Standard & Poor's (S&P) 500 Stock Index, as its name implies, is made up of 500 listed and over-the-counter stocks. About 78 percent of the stocks are industrials, 12 percent are utilities, 2 percent are transportation companies, and 8 percent comprise financial institutions. The market value of all 500 stocks is equal to about 80 percent of the value of all stocks traded on the New York Stock Exchange.

The S&P 500 Index is not a simple arithmetic average. The price of each stock in the index is first weighted according to the total number of shares outstanding. For example, a stock with a price of $20 and 10 million shares outstanding would have twice the impact of a stock with a price of $20 and only 5 million shares outstanding.

The base for the S&P 500 Index is the average value of those 500 stocks during the 1941–1943 period, and that has been set at $10. An index price of 272.00, for example, would mean that the average market value of the basket of stocks is 27.2 times greater than it was then.

Where to Find More Information

The Index & Option Market of the Chicago Mercantile Exchange publishes a booklet, *Using S&P 500 Stock Index Futures*, as well as excellent background information and current data on S&P 500 Index futures. An introductory book that would be helpful is *How the Stock Market Works* (2nd edition, 1993), edited by John M. Dalton and published by the New York Institute of Finance in New York.

Delivery months: March, June, September, December	
Price in index points and hundredths	Exchange: FINEX
Minimum tick: .01 = $10.00	Contract size: $1000 × U.S. Dollar Index

The U.S. Dollar Index represents a basket of foreign currencies of 10 major U.S. world trading partners: Germany, Japan, France, United Kingdom, Canada, Italy, Netherlands, Belgium, Sweden, and Switzerland. When the value of their currencies goes up, the U.S. Dollar Index goes down and vice versa. Each currency is weighted in the Index according to that country's share of world trade. As of this writing, the deutsche mark receives the heaviest weight and the Swiss franc the lightest.

The base of the index is the value of the dollar against the 10 foreign currencies in March 1973 and is set equal to 100. The current index represents the percentage change in value of the U.S. dollar since that time. For example, an index of 105.00 means that the value of the U.S. dollar is 5 percent greater against the 10 currencies than it was in March 1973.

The Index is published by Reuters and is updated continuously. It has ranged widely in value, from a high of 164.72 (February 1985) to a low of 78.20 (September 1992). Settlement is by cash only. Potential users of U.S. Dollar Index futures include any business or investor whose costs or assets are exposed to multiple foreign exchange rate risk.

Where to Find More Information

U.S. Dollar Index futures are relatively new. The exchange publishes several pieces of literature, which may be ordered directly. The address is Financial Instrument Exchange, 4 World Trade Center, New York, NY 10048.

Inasmuch as the index is the obverse side of the foreign currency values, information on the currencies themselves is germane. Broad sources of information on the relationship between the U.S. dollar and these 10 currencies would include the U.S. Department of the Treasury and the U.S. Department of Commerce in Washington, DC.

In addition, there are three informative periodicals in the field: *The Economist* (527 Madison Avenue, New York, NY 10022); *Financial Times of London* (75 Rockefeller Plaza, New York, NY 10019); and *Euromoney* (14 Finbury Circus, London EC2, England).

Other Index Futures

The following index futures are still traded, but their trading volume is relatively low and open interest is currently a fraction of what it once was.

CRB Index. The CRB (Commodity Research Bureau) Futures Price Index was first devised in 1957 and has been modified over the years to

reflect the advent of new markets and changes in established markets. It currently reflects the aggregate price movement of 17 nonfinancial commodities.

CRB Index futures can be used to speculate on the rise and fall of overall commodity prices; and as an inflation hedge, by buying CRB Index futures and selling NYSE Index futures.

CRB Index futures began trading on the New York Futures Exchange in 1986. The contract size is $500 times the Index. Futures prices are expressed in Index points and hundredths. The minimum price change is 5/100 of a point, which equals a $25 change in equity.

Value Line Stock Index. The Value Line was the first index futures contract to be traded. It is based on the stocks contained in the *Value Line Investment Survey*.

The Value Line Index (VLA) comprises 89 percent industrial stocks, 10 percent utilities, and 1 percent rails; it includes virtually all of the stocks in the S&P 500 and 70 percent of the stocks listed on the New York Stock Exchange.

Each stock receives equal weight in the calculation of the VLA. No allowance is made for capitalization or price. As a consequence, the VLA tends to be more sensitive than other stock indexes to fluctuations in lower priced stocks and the stocks of smaller companies.

Value Line futures are traded on the Kansas City Board of Trade. Contract size is $500 times the Index, and the minimum tick is .05 Index points, which equal $25. There is also a mini–Value Line Stock Index futures contract; its contract size is $100 times the Index.

Major Market Index. The Major Market Index (MMI) is made up of 20 blue-chip stocks listed on the New York Stock Exchange. A broad section of heavily capitalized industry is represented.

The MMI is price weighted. It is calculated by adding up the prices of the individual stocks and dividing by an index number; the index number changes from time to time to allow for dividend changes and stock splits. No allowance is made for the number of shares of stock each company has outstanding.

Most of the stocks in the MMI are also in the Dow Jones Industrial Average. The movement of the MMI thus has a high positive correlation with movement of the Dow Jones.

The MMI is traded on the Chicago Mercantile Exchange. Its contract

size is $250. The minimum tick is .05 Index points, which equals a $25 change in equity.

INTEREST RATES

Forecasting the course of interest rates is complex. Some of the domestic factors to be taken into consideration include demand by business for funds to construct new plants, carry inventory, or retire debt; government spending for public works, social welfare, and military personnel and hardware; changes in income tax; operations by the Federal Reserve Board to control inflation; changes in the money supply; and the level of consumer personal income, debts, and savings.

Interest rates are also affected by interest rates in other nations, balance of trade, the availability of other sources for money, interest rates on other short-term instruments such as CDs and commercial paper, and general economic conditions.

Futures contracts are traded on all three Treasury securities: bonds, notes, and bills. There is also a very liquid futures market in Eurodollars. The newest interest-rate futures contracts are 1-Month London Interbank Offered Rate (LIBOR), 30-Day Federal funds, and Euroyen.

Where to Find More Information

The home exchanges are very good sources for both current and background information on these highly active futures contracts. The address of the Chicago Mercantile Exchange is 30 South Wacker Drive, Chicago, IL 60606. The address of the Chicago Board of Trade is LaSalle at Jackson, Chicago, IL 60604.

Information on the health of business in the United States may be found in two publications of the U.S. Department of Commerce, Washington, DC. They are the *Survey of Current Business* and *Business Conditions Digest.*

Two books that would be of interest are *Fed Watching and Interest Rate Projections,* by David M. Jones; and *Yield Curve Analysis,* by Livingston Douglas. Both are available through the New York Institute of Finance in New York.

Delivery months: March, June, September, December

Price = 100 minus annual yield, expressed as a percent

Minimum tick: .01% = $25.00

Exchange: IMM

Contract size: $1 million

A Eurodollar is a U.S. dollar on deposit outside of the United States. Most Eurodollars reside in the London branches of major world banks. They are the basis for dollar loans made by European banks to commercial borrowers. There are also fixed-income securities denominated in Eurodollars.

Eurodollars are part of what is known as the "money market." Their price reflects short-term interest rates in Europe; specifically, the 3-month London Interbank Offered Rate. The factors that affect short-term interest rates are many. They include actions taken by central banks to raise or lower the money supply, interest rates in other nations, balance of trade, the present level of demand for short-term loans, the availability of other sources for money, interest rates on other instruments such as CDs and Treasury bills, and general economic conditions.

The Eurodollar futures contract was introduced in December 1981 and has grown rapidly. Futures prices have ranged from 83 percent to just above 96 percent, representing short-term interest rates from 17 percent to just above 3 percent. The asset underlying the futures contract is a 90-day Eurodollar time deposit of $1 million. Settlement is by cash only.

Delivery months: March, June, September, December

Price in percent of par (100%)

Minimum tick: .01% = 2500 yen

Exchange: CME

Contract size: 100 million yen

Euroyen futures are the most actively traded non-U.S. interest rate contract in the world. The asset underlying the futures contract is a 3-month time deposit of 100,000,000 yen. Settlement is by cash.

Like Eurodollars, the Euroyen futures price is expressed in terms of an index that is derived by subtracting the implied interest rate from 100. For example, if the implied Japanese 3-month interest rate for a given period is 5.65 percent, the corresponding Euroyen futures price would be 94.35 (100 – 5.65).

Euroyen futures can be employed in a variety of ways. The most basic use would be to control the vulnerability to changes in yen interest rates, such as would be sustained by a fiduciary who has yen on deposit in a Japanese bank or has a fixed requirement to borrow yen in the coming months. There are more sophisticated uses, most of which are beyond our scope here.

Initial and maintenance performance bonds (and profits) for Euroyen futures are denominated in yen; the CME has a mechanism that enables its clearing members to transfer and receive funds in yen. The CME also maintains a direct link with the Singapore International Monetary Exchange (SIMEX). Called the Mutual Offset System, this link makes positions on the CME fungible with those established on SIMEX.

Delivery months: consecutive months out 6 months	
Price in percent of par (100%)	Exchange: CME
Minimum tick: .01% = $25.00	Contract size: $3 million

LIBOR is an acronym for London Interbank Offered Rate, the interest rate at which the biggest London banks are willing to loan Eurodollar deposits to each other. It is similar to the prime rate in the United States.

Eurodollars make an excellent benchmark for short-term interest rates. The annual market is well in excess of $1 trillion and is dispersed throughout Europe and the Caribbean.

Like Eurodollar futures, LIBOR contracts are priced in terms of an index. A price futures of 92.26, for example, would reflect an underlying interest rate of 7.74 percent (100 – 92.26). The minimum change in the futures price is $^{1}/_{100}$ of 1 percent of par, which equates to a change of $25 in equity (.0001 × $3,000,000 × $^{30}/_{360}$). The asset underlying the futures contract is a 1-month time deposit of $3 million. Settlement is by cash and is based on the average spot market value of LIBOR at that time.

Both Eurodollar and LIBOR futures markets allow a hedger or lender to lock in an interest rate for a specified period of time. The time horizon for Eurodollar futures is 3 months; for 1-Month LIBOR futures, it is 1 month. The shorter time horizon for LIBOR futures enables a market participant to fine-tune his risk exposure by allowing him to reevaluate the situation every month and, if desired, adjust his position. LIBOR futures have proven to be effective for cross-hedging commercial paper and other short-term credit instruments.

LIBOR futures were introduced on the Chicago Mercantile Exchange in 1991 and have achieved early success. Open interest as of this writing is about 50,000.

Commodity: 30-Day Fed Funds

Delivery months: consecutive months to 25 months ahead

Price: 100 minus monthly average overnight Fed funds rate

Exchange: CBOT

Minimum tick: .01% = $41.67

Contract size: $5 million

Each business day, U.S. banks trade about $100 billion in deposits among themselves. These deposits have a term to maturity of 1 day and are known as "overnight Fed funds."

The rates these banks charge each other for these 1-day loans are averaged and published daily by the Federal Reserve Bank of New York. This average serves as an accurate benchmark for the spot cost of short-term credit.

A close correlation exists between the 1-month term rate for Fed funds and rates for CDs, commercial paper, LIBOR, and Eurodollars. Money managers can use 30-Day Fed Funds futures to manage risk in these and other short-term credit instruments.

For a basic example, a fiduciary who intends to borrow money under a fixed rate 1 month hence could protect against rising interest rates (and subsequent opportunity loss) during the interim by selling short 30-Day Fed Fund futures now.

Settlement is in cash and calls for delivery of the interest paid on $5 million in overnight Fed funds held for 30 days. 30-Day Fed Fund futures began trading in October 1988. Open interest as of early 1997 stands at 25,000.

Delivery months: March, June, September, December

Price = 100% minus Treasury bill yield — Exchange: CME

Minimum tick: .01% (1 basis point) = $25.00 — Contract size: $1 million

Cash Treasury bills (T-bills) with maturities of 3, 6, and 12 months are auctioned at regular intervals by the federal government. They are bought at a discount and redeemed at par, the difference representing the yield. The asset underlying the T-bill futures contract is a 90-day cash T-bill.

Prices of cash T-bills are quoted in *basis points*, with each point equal to $1/100$ of 1 percentage point, or .01 percent. T-bill futures prices are expressed in terms of an index that is equal to 100 minus the T-bill's annual yield. For example, a T-bill with an annual yield of 7.50 percent would be quoted at 92.50.

T-bills are the bellwether of the "money market." The supply of new T-bills depends on the government's need for funds. Prices in the highly liquid secondary (dealer) market reflect the demand for short-term investments by business and private investors. From a larger perspective, T-bill prices also respond to changes in midrange and long-term interest rates.

Delivery months: March, June, September, December

Price in percent and $1/32$% of par — Exchange: CBOT

Minimum tick: $1/32$ = $31.25 — Contract size: $100,000

U.S. Treasury bonds are sold through the Federal Reserve to domestic and foreign investors to meet long-term obligations of the federal government. Like Treasury notes, T-bonds are coupon bearing; they pay a fixed dollar amount of interest semiannually. T-bond maturities are from 10 to 30 years. They are marketed in two time frames. Bonds that mature in 20 years are sold at regular quarterly auctions. Bonds that mature in 30 years are not sold at regular intervals but are marketed about every 3 years. The secondary (dealer) market for T-bonds is extremely broad and liquid.

U.S. Treasury bonds are the international flagship for long-term interest rates, and their cash and futures prices are sensitive to even small changes in the interest rate picture.

Delivery months: March, June, September, December	
Price in percentage and $\frac{1}{32}$% of par	Exchange: CBOT
Minimum tick: $\frac{1}{32}$ = $31.25	Contract size: $100,000
Delivery months: March, June, September, December	
Price in percentage and $\frac{1}{32}$% of par	Exchange: CBOT
Minimum tick: $\frac{1}{2}$ of $\frac{1}{32}$ = $15.625	Contract size: $100,000
Delivery months: March, June, September, December	
Price in percentage and $\frac{1}{128}$% of par	Exchange: CBOT
Minimum tick: $\frac{1}{128}$ = $15.625	Contract size: $200,000

Treasury notes are midrange on the yield curve, maturing in from 1 to 10 years. They are sold to public investors by the Federal Reserve to fund ongoing government operations and refinance the national debt. There is also an active secondary (dealer) market.

As shown above, there are three active T-note futures contracts. They differ in the maturity of their underlying cash instruments and their pricing.

The delivery vehicle for the 10-year futures contract is a T-note that matures in $6\frac{1}{2}$ to 10 years; the minimum futures price change is $\frac{1}{32}$. The delivery vehicle for the 5-year futures contract is any of the four most recently issued 5-year Treasury notes, and the minimum futures price change is $\frac{1}{2}$ of $\frac{1}{32}$, or $\frac{1}{64}$. For the 2-year note, the deliverable grade is any Treasury note with an original maturity no greater than 5 years, 3 months; remaining maturity of not less than 1 year; and not more than 2 years from possible delivery. The minimum price change is $\frac{1}{4}$ of $\frac{1}{32}$ point, or $\frac{1}{128}$.

MEATS

Futures contracts are traded on cattle, feeder cattle, hogs, and pork bellies. The Chicago Mercantile Exchange is the home of all of these futures contracts and has published a wealth of information on them over the years.

Current information on the supply of and demand for these commodities is provided by both private research sources and the U.S. Department of Agriculture. A USDA publication that covers sales, prices, and slaughter in all of the meats is *Livestock, Meat and Wool,* published weekly. Pertinent publications for each individual market are listed at the end of each briefing sheet.

Cattle, Live (Cattle)

Delivery months: February, April, June, August, October, December

Price in cents per pound	Exchange: CME
Minimum tick: 2½ cents = $10.00	Contract size: 40,000 pounds

Cattle raised for beef comprise the largest single segment of American agriculture. Fresh beef cannot be stored; prices will adjust to sell all the beef that is in the supply pipeline. In the past 30 years, cattle futures prices have ranged from a low 25 cents to a high of 84 cents a pound.

Cattle are fed on grass or corn. They are placed on feed at a weight of about 700 pounds and marketed some 8 to 10 weeks later at weights of 1000 to 1200 pounds. Most fed cattle come from the feed grain areas of the Midwest. More calves are born in the spring than any other time of the year, so most yearlings are put on feed in the fall. Cattle prices tend to be seasonally lowest at this time and highest in early spring.

Cattle prices are affected by several factors. These include the weather during the feeding season, the condition of range and pasture land, government buying programs, and the prices of competitive meats like chicken and pork. From a larger perspective, consumer preferences also play a significant role. Average per capita consumption of beef has been declining in recent years.

Cattle have an irregular long-term price/production cycle of about 8 years, in which the numbers of animals available for slaughter respond to changes in the prices of cattle and feed, rising gradually when cattle prices remain relatively high and falling when cattle prices are low.

Where to Find More Information

USDA is the primary source of current information on the supply and demand situation in cattle. USDA publications include weekly, monthly, and quarterly releases. The weekly reports contain summaries of market news. There are monthly reports on the placement of cattle on feed, numbers on feed by weight group, and marketing of cattle in the major feeding states. USDA also publishes a comprehensive quarterly *Cattle on Feed* report; and in February and July, the USDA report *Cattle* shows, among other data, the number of potential feedlot cattle available.

Other USDA titles include *Livestock Slaughter,* which is published every month and annually.

Delivery months: January, March, April, May, August, September, October, November

Price in cents per pound	Exchange: CME
Minimum tick: 2½ cents = $12.50	Contract size: 50,000 pounds

Feeder cattle are yearling steers. They comprise the input for cattle feeders, who fatten them up and sell them for beef. Feeder cattle futures have been traded since 1971; their prices have ranged widely, from 25 cents to 95 cents a pound. The futures contract is cash settled. In January 1993, the contract size was increased from 44,000 pounds to 50,000 pounds.

Cattle are fed on grass or corn. They are placed on feed at a weight of about 700 pounds and marketed some 8 to 10 weeks later at weights of 1000 to 1200 pounds. More calves are born in the spring than any other time of the year, so most yearlings are put on feed in the fall. Cattle prices tend to be seasonally lowest at this time and highest in early spring.

The demand for feeder cattle reflects prices for finished cattle. Finished cattle prices are affected by several factors (see page 218).

Where to Find More Information

USDA is the primary source for information on the supply and demand situation in cattle. USDA publications include weekly, monthly, and quarterly releases. The weekly reports contain summaries of market news.

There are monthly reports on the placement of cattle on feed, numbers on feed by weight group, and marketing of cattle in the major feeding states. USDA also publishes a comprehensive quarterly *Cattle on Feed* report; and in February and July, the USDA report *Cattle* shows, among other data, the number of potential feedlot cattle available.

Commodity: **Hogs (Lean)**	
Delivery months: February, April, June, July, August, October, December	
Price in cents per pound	Exchange: CME
Minimum tick: 2½ cents = $10.00	Contract size: 40,000 pounds

Most hogs are raised where their food is grown: in the Corn Belt. Iowa is the leading hog producer by a large margin. Other hog-producing states are Illinois, Minnesota, Ohio, and Wisconsin.

Although the pattern has been modified recently by confined hog raising, sows tend to farrow (give birth) in the spring and the fall. The time from farrowing to a market weight of 220 pounds is about 6 months. Slaughter of mature animals is lowest in midsummer, and prices tend to firm then. Demand also peaks during the summer barbecue season. Prices are seasonally lowest in November–December period, when slaughter is at its highest.

One factor that affects the supply of hogs is the hog/corn ratio, which is the number of bushels of corn it would take to buy 100 pounds of live hog. When corn prices are high relative to hog prices (the ratio is low), hog production is discouraged. A high ratio (cheap corn, high-priced hogs) acts as a spur to hog production.

There is also a long-term "cycle" to hog production, as producers respond to the ups and downs in hog prices: High hog prices lead to increased production; this pushes hog prices down, and that causes production to slow, which pushes prices back up again. In the past, the hog cycle has had an average length of about 4 years.

Demand for hogs reflects consumer demand for pork products, which include bacon, ham, roasts, chops, and frankfurters. This demand, in turn, reflects pork prices, the prices of other red meats, consumers' levels of disposable income, and dietary preferences.

As of February 1997, the hog futures contract is cash settled.

Where to Find More Information

The quarterly USDA *Hogs and Pigs* report is a comprehensive source of information. The March and September reports cover 14 states representing about 85 percent of hog production; the June and December reports cover all 50 states. The report shows hogs on farms by weight category and farmers' stated farrowing intentions, from which forthcoming supplies may be estimated. Other pertinent USDA publications include *Livestock Slaughter,* published monthly and annually; the quarterly *Hog Outlook;* and, *Feed Outlook,* published monthly.

Delivery months: January, March, May, July, August, September, November

Price in cents per pound	Exchange: CME
Minimum tick: 2½ cents = $10.00	Contract size: 40,000 pounds

A pork belly is uncured bacon. One hog yields two pork bellies of from 12 to 14 pounds each. Demand for bacon does not change much when the price of bacon changes. As a consequence, the principal price-making factor for pork bellies is their supply, and a relatively small change in supply can have a great effect on price. The forthcoming supply of fresh pork bellies can be approximated by projecting hog farrowings forward for 6 months and multiplying the resulting number of hogs by 26 pounds. Longer term, the supply of pork bellies depends on the number of hogs that are slaughtered. This brings the hog/corn ratio and the hog cycle into the equation.

Where to Find More Information

USDA publishes information on the bacon slice, which reflects demand for the end product.

The quarterly USDA *Hogs and Pigs* report is a comprehensive source of information. The March and September reports cover 14 states repre-

*On April 4, 1997, the CME began trading this new pork bellies futures contract. It differs from the old contract in three ways: it is cash settled; it is for *fresh* bellies; and the futures contracts months are different. All other contract specifications remain the same. To provide for an orderly transition, the old frozen pork belly contract will continue to trade through August 1998.

senting about 85 percent of hog production; the June and December reports cover all 50 states. The report shows the number of hogs on farms by weight category and farmer's stated farrowing intentions. Other pertinent USDA publications include the *Hog Outlook,* published quarterly, and *Livestock and Meat Situation.*

METALS

Metals futures markets comprise copper, gold, platinum, and silver. The last three are generally looked on as precious metals, whereas copper is considered to be an industrial metal.

The futures markets for copper, gold, and silver are on the Commodity Exchange (COMEX) division of the New York Mercantile Exchange. Platinum futures are traded on the New York Mercantile Exchange. Smaller size contracts of gold, silver, and platinum are traded on the MidAmerica Commodity Exchange in Chicago.

Where to Find More Information

The U.S. Geological Survey in Washington, DC periodically releases information based on the level of metal imports, secondary recovery in the United States, and stocks of the metal held by importers, dealers, and fabricators of this country. It also publishes the *Minerals Yearbook* and the *Mineral Industry Surveys,* which provide timely data on production, distribution, stocks, and consumption of mineral commodities. General information on metals supply and demand may also be found in the *Statistical Abstract of the U.S.,* which may be obtained from the Superintendent of Documents, Government Printing Office, Washington, DC 20402.

Magazines devoted to the subject include *Engineering and Mining Journal* (Intertec, Chicago, IL) and *Modern Metals* (Trend, Chicago, IL).

Commodity: High Grade Copper

Delivery months: consecutive months	
Price in dollars and cents per pound	Exchange: COMEX
Minimum tick: $5/100$ cent = $12.50	Contract size: 25,000 pounds

Most of the world supply of copper is produced in the United States. Other leading world producers are Zambia, Chile, Canada, Zaire, and Peru. Mine production in the United States is centered in Arizona. The United States is also the world's largest consumer of copper, accounting for about 25 percent of total world usage. CIPEC, a trade organization comprising major world producers, accounts for about 70 percent of international trade in copper.

Copper is an excellent conductor of heat and electricity and virtually does not oxidize. Its principal uses are in electric and electronic equipment, building construction, and engines. However, it is found in almost every product in an industrialized nation.

Because of its international nature, copper prices are directly affected by supply-reducing strikes or political unrest in foreign producing countries. Foreign exchange rates influence the effective price of copper to an importing nation. Other price factors include government embargos, production curtailments because of water shortage or other environmental considerations, overt efforts by CIPEC to control prices, and the amount of stockpiled copper, particularly at the London Metal Exchange (LME), a major world repository.

From a longer perspective, copper prices also reflect changes in the level of economic activity in consuming countries, and the prospect of another metal (aluminum) or a man-made material substituting for it in some uses.

Delivery months: current 3 months plus any February, April, August, and October out to 23 months; and any June and December within 60 months

Price in dollars and cents per troy ounce

Exchange: COMEX

Minimum tick: 10 cents = $10.00

Contract size: 100 troy ounces

Traditional supply/demand analysis of gold is difficult because of the psychological factors involved. Gold is a charismatic metal that was once thought to have magical powers. It is considered a hedge against inflation and a safe haven for wealth when paper currencies fall into disrepute.

The largest producer of gold is South Africa, which accounts for some 65 percent of annual world production. The former USSR has been the next largest, with about 15 percent. Gold is also generated by the melting down of scrap. This secondary supply is more difficult to gauge than gold refined from ore, but about one-quarter of annual supplies are estimated to be derived from this source.

As an industrial metal, gold also has unique properties. It does not rust or corrode. It is an excellent conductor of heat and electricity and is the most malleable of all metals. It finds its way into a variety of products, including jewelry, electrical and electronic components, dentistry, coins, and medals and medallions. Of these, jewelry is the most significant, taking about 70 percent of the available supply in recent years.

The demand for gold has several facets. An important one is the demand for jewelry, which, in turn, reflects the level of world discretionary spending power. The prospect for lower interest rates may cause gold buying in anticipation of business expansion and a general increase in economic welfare. Sales of gold by central banks to raise foreign exchange would put pressure on gold prices. An increase in gold production would also have a depressing effect. Changes in inflation pressures, as measured by popular indexes, may cause investor demand for gold to rise or fall.

The Gold Institute (1112 16th Street NW, Suite 240, Washington, DC 20036) publishes a bimonthly newsletter as well as several reports on gold mining, fabrication, and usage. A videotape entitled *Gold and Modern Technology* is also available. Information on these may be obtained from the institute.

Commodity: Platinum

Delivery months: January, April, July, October

Price in dollars per troy ounce	Exchange: NYME
Minimum tick: 10 cents = $5.00	Contract size: 50 troy ounces

Production of platinum is dominated by South Africa, which accounts for the lion's share of world supplies. South African ores are as much as 10 times richer than anywhere else in the world. Canada, a distant second, produces platinum only as a by-product to its nickel and copper mining operations.

Demand for platinum is three-pronged: in jewelry, as a catalyst in the

refining of crude petroleum, and for use in automotive catalytic converters. Most of the annual production of platinum goes into emission control devices on gasoline-driven cars and light trucks in the United States. Changes in this aspect of demand would derive from relaxed Environmental Protection Agency (EPA) emission standards, the discovery of a substitute for platinum in catalytic converters, or increasing concern with automotive air pollution in Japan and Western Europe.

The largest consumer of platinum for jewelry is Japan, where for centuries the metal has been preferred by women over gold for necklaces and wedding and engagement rings. However, gold has been making inroads into the Japanese jewelry market in recent years. Platinum's role in the petroleum cracking process is as a catalyst for certain necessary chemical reactions.

Like gold, the metal also is used by investors as a store of value, and its price from time to time has been higher than the price of gold. Platinum prices are also more volatile than gold prices, for two reasons: the platinum futures market's relatively small size and low liquidity, and the fact that aboveground holdings of investment platinum in the form of bars and wafers are small.

Commodity: Silver	
Delivery months: March, May, July, September, December	
Price in cents per troy ounce	Exchange: COMEX
Minimum tick: $\frac{1}{10}$ cent = $5.00	Contract size: 5,000 ounces

Silver comes from three sources. Primary production comes from the refining of newly mined ore and consistently falls short of world silver demand. Secondary production fills the gap; it comprises silver that is recovered from melted art objects and flatware, used photographic film, and scrap electrical connectors. The third source is world silver stocks, held in such repositories as COMEX, the London Metal Exchange (LME), and government coffers.

Mexico is the world's largest producer of silver, followed by Peru, Canada, Australia, and the United States.

Demand for silver arises from several sectors of the economy. Silver is an excellent conductor of heat and electricity, is resistant to corrosion, and has beauty. Its most consistent use is in photographic film and solu-

tions, which take about 120 million ounces annually. Electronic components consume another 60 to 80 million ounces each year, and this amount is likely to rise with increasing world industrialization. Silver is the favorite metal of European jewelry makers. The demand for silver in jewelry is responsive to changes in the metal's price. For example, jewelry demand is estimated to have fallen more than half during the silver bull market of 1979–1980, when prices soared to 50 cents per ounce.

Other uses are dentistry, the making of storage batteries, and as a hedge against inflation or currency unrest, like gold.

The Silver Institute (1112 16th Street NW, Suite 240, Washington, DC 20036) publishes a bimonthly newsletter as well as several written reports on silver mining, fabrication, and usage. A videotape entitled *Silver* is also available. It covers the history, production, and consumption of the white metal.

WOOD

There is only one wood futures contract actively traded today. It is lumber and is traded on the Chicago Mercantile Exchange. For some years there was also a futures market in plywood, but it fell to a lack of trading activity.

Commodity: Lumber

Delivery months: September, November, January, March, May

Price in dollars and cents per 1,000 board feet

Minimum tick: 10 cents per 1,000 board feet = $8.00

Exchange: CME

Contract size: 80,000 board feet

Most of the lumber produced in the United States comes from the Pacific Northwest. Douglas fir is the leading lumber and is grown primarily in Oregon, Washington, and northern California.

The bulk of the lumber produced goes into the construction of new residential homes, so the actual and anticipated housing starts are important influences on prices. There is also a seasonal price movement; sawmills tend to acquire a large inventory of logs at the end of the warm-weather cutting season, and cash lumber prices tend to hit annual lows then. Prices are usually highest in the spring, as the building season gets under way. Prices are also affected by the level of logging and mill operation; and any strikes,

fires, drought, or heavy precipitation that would slow operations will reduce supply and have a positive effect on prices.

In addition to the level of housing starts, demand for lumber is also indirectly influenced by interest rates, the availability of mortgage credit, and weather during the building season.

Where to Find More Information

The U.S. Department of Commerce makes monthly reports on housing starts and building permits. These reports are widely published and are followed closely by lumber interests. There is also a large amount of trade literature available. The WWPA organization (522 SW 5th Avenue, Yeon Building, Portland, OR 97204) publishes *Western Lumber Facts* and a *Statistical Yearbook*. The Department of Commerce (Census Bureau) publishes *Lumber Production & Mill Stocks;* it is sold through the Government Printing Office, Division of Public Documents, Washington, DC 20402. Random Lengths Publications, Inc., Box 867, Eugene, OR 97440 publishes *Random Lengths,* a monthly; and *Random Lengths Yearbook,* which presents data on lumber production, use, and forest products trends.

Chapter 17

Futures on the Internet

The seeds for the Internet were planted in the late 1960s, when the U.S. government sponsored the development of electronic links between itself and various research computers at major universities. The principal purpose of the network was to speed the movement of scientific and technical information. However, the government also envisioned the network as a possible means of emergency communication if the telephone system were ever knocked out.

As time passed, the network grew. Schools, businesses, libraries, and individuals joined in. And the messages changed. The network's normal diet of official reports and research data began to be interlaced with news and entertainment.

It was the advent of the personal computer that caused the Internet to explode. Suddenly any person's desk could become a window on the world. The addition of movement, color, sound, and photographic images enhanced the view. The Internet today consists of thousands of computer networks tied together.

There is no single organization that owns or controls the Internet; at present, there is no government regulation or censorship of the information made available.

There are no long-distance charges when you send or receive information over the Internet. A lot of the information itself is also free, pro-

vided by government agencies, colleges and universities, commercial companies, and public-spirited private individuals.

The World Wide Web, which is part of the Internet, comprises a huge collection of documents stored in computers around the globe.

The Web now numbers some 50 million pages, each with its own address. Buried in those millions of pages is a great deal of data and information about the futures markets, most of which is available at no charge from the provider. Like gold nuggets in a mountain stream, the problem is finding them.

If you join one of the big commercial services—America Online, Prodigy, Microsoft Network—this problem is partially solved for you. Each service has its own investment center or financial pages. They contain tailored lists of Internet providers of economics information.

If you opt instead for a simple, no-frills ticket to the Internet, you'll have to do the navigating for yourself. There are hundreds of firms that can

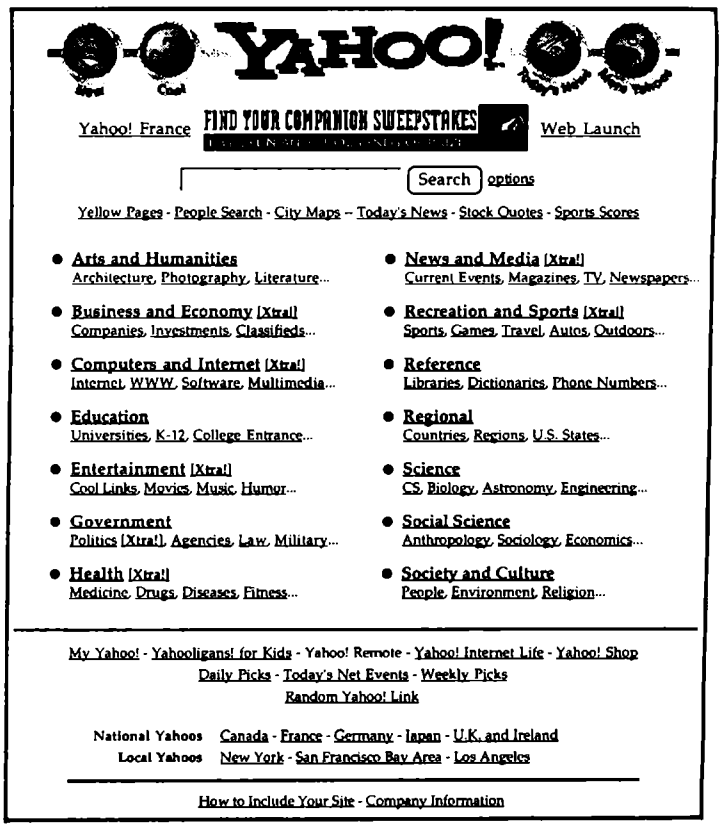


Figure 19 YAHOO is one of the most popular Internet search engines.

connect you. They're called Internet service providers, and their prices vary with the number of other services they offer. The typical basic service comprises an on-ramp to the Web, browser software, an e-mail box, technical support, and unlimited free Net time. For this you can expect to pay about $20 a month, less on an extended contract. Some companies (AT&T, for example) offer free Internet access to their customers or subscribers.

There are commercial Internet directories that can help you in your search. They are like the Yellow Pages and are available on CD-ROM, disc, and in print. You'll find them at your local computer store.

There are also online directories, and they are mostly free. Some of the best known are YAHOO, Lycos, Magellan Internet Guide, Alta Vista, Web Crawler, and Infospeak Guide.

YAHOO is widely viewed as the most popular because of its design and large database. Here's the first cut on YAHOO's Web index:

Art and Humanities	News and Media
Business and Economy	Recreation and Sports
Computers and Internet	Reference
Education	Regional
Entertainment	Science
Government	Social Science
Health	Society and Culture

If you click down from Business and Economy to Markets and Investments and search Futures, you'll get 294 hits (as of this writing).

If that still sounds like a lot to scan, you can call up a smaller directory (meta-list). An example is InvestSIG, which is part of the Capital PC User Group (CPCUG), a nonprofit organization in Rockville, MD. Its URL is:

http://cpcug.org/user/invest/

If you were allowed to have only one Internet source for futures information, this would be it. There are literally too many features to list here. Like the other online directories we've mentioned, you can contact InvestSIG directly; you don't need be with an elaborate online service.

An overview of what InvestSIG offers includes:

- ✔ Intraday price quotes from the Chicago Board of Trade and Chicago Mercantile Exchange.

- ✔ Intraday futures charts from the New York Mercantile Exchange, Coffee, Sugar & Cocoa Exchange, New York Cotton Exchange, Minneapolis Grain Exchange, and Chicago Mercantile Exchange.
- ✔ Daily and weekly charts for 32 different futures contracts.
- ✔ Long-term graphs of economic indicators.
- ✔ Newsletters, magazines, and journals of interest to futures traders.
- ✔ Historical values for interest rates and stock indexes.
- ✔ Inflation-corrected market indexes.
- ✔ Futures exchange and contract information.
- ✔ Software of interest.
- ✔ Collection of financial links to related Web sites.

Another meta-list is **FINWeb**, at

http://www.finweb.com

FINWeb describes itself as a "financial economics www server." It is based at the University of Texas, which may account for its more scholarly approach.

The first item you encounter at the site is a long list of financial journals. The journals differ in their availability. Some restrict full online access to current print subscribers; others allow anyone to read abstracts or the full text of past and forthcoming articles. Some provide free sample copies, which can be ordered online.

Economics working papers are also presented. These fall into 22 subject categories, including finance and international trade, and are free. Most are available for online reading, although PostScript or Adobe Acrobat Reader may be required.

Databases available on FINWeb include University of Michigan/Commerce Department data on retail sales, wages, housing starts, manufacturers' inventories, census, and leading economic indicators. The industrial outlook shows capacity utilization and forecasts for various sectors of the economy, including industries that have futures markets: e.g., gold and silver mining, lumber, and fats and oils.

FINWeb's financial data finder has information on cash prices for Treasuries, foreign exchange rates, municipal bond yields, prices for active futures contracts, and international yield curves.

A link is provided to other Web servers of financial and economics information.

Full-line brokerage firms (futures commission merchants) are not very well represented on the Net, at least not yet. On the other hand, discount futures brokers seem to be actively pursuing ethereal business opportunities.

For example, **Jack Carl Futures** (http://www.jackcarl.com) provides a wide variety of free futures information, including:

- ✔ End-of-day price quotes for the last 7 trading days.
- ✔ A monthly commodity calendar showing release dates of government reports, delivery and settlement days, and news.
- ✔ The symbol, delivery months, trading hours, contract size, minimum tick, and daily price limits for each futures market.
- ✔ Margin requirements for net positions and spreads.
- ✔ Daily and overnight comments on market groups.
- ✔ "Web Links," a meta-list that links directly to YAHOO, Wall Street Online, Waldemar's List of Futures Sites on the World Wide Web, CFTC *Commitments of Traders Report,* GLOBEX options quotes, and *Futures* magazine.

Another example is **Futures and Options Trading Group**, a Portland, Oregon, introducing broker (http://www.teleport.com/~futures). The information it provides is free, but it does ask you to register. Registration gives the group the information it needs to evaluate you as a prospective client and gets you a free trial subscription to the group's weekly futures newsletter, *Trade Plans,* which offers market overviews and specific trading recommendations.

Buttons to click include:

- ✔ Daily closing prices for major futures contracts on U.S. exchanges. (For a direct line to prices, use http://www.teleport.com/~rpotts/prices/)
- ✔ Special welcome to hedgers and traders outside the United States.
- ✔ *Futures* magazine.
- ✔ Requirements for the purchase and sale of physical commodities.
- ✔ Associated Press commodity news.
- ✔ Links to other futures-oriented Web pages, including USDA, CME, MidAm, LIFFE, KCBT, and the futures page from YAHOO.

Lind-Waldock (http://www.ino.com/broker/home.htm), the largest futures discount broker in the country, takes a different approach. There are no free price quotes or links to other sources of futures information, but there are some unique features.

For example, the forms that you need to open an account with Lind-Waldock can be downloaded right on your computer. There's a trader's catalog that offers discount prices on some 250 books, products, and information about the futures and options markets; you can order the catalog online. There's also a monthly futures quiz, in which you can win a $50 catalog gift certificate, and a page of trading tips.

The centerpiece is "Lind-Online," which provides real-time access to portfolio information, market commentary, and technical analysis.

Services provided include:

- ✔ Personal pages with quotes or current price charts showing the markets and criteria you specify.
- ✔ Real-time prices for all trading sessions, day and night.
- ✔ Live intraday comments from the trading floor, with market analysis and trading recommendations.
- ✔ Online access to your account balance, current open positions, and resting orders.
- ✔ Online order entry, which allows you to place or cancel orders directly from your computer keyboard.

To use Lind-Online, you don't have to go onto the Net; you can access it directly through an 800 telephone number. However, you must have a current futures account with Lind-Waldock, and there are per-minute access fees. Also, at this writing Lind-Online is available only for IBM-compatible computers.

Finally, there is something you can do about the weather: profit from it. **Freese-Notis Weather Service**, at

http://www.weather.net/fn/infoseek.weather.html

is a unique adviser that not only predicts weather but offers futures trading advice based on those predictions. (The name is not a play on words; the service was founded in 1973 by Harvey Freese and Charles Notis.)

Subscribers get long-range, mid-range, and immediate weather forecasts for the world's major crop-growing and energy using regions. Delivery means include fax and Internet. Custom weather predictions are also available for an hourly consulting fee. Specific, weather-based commodity trading advice is provided daily, and there is a year-round newsletter. There's a hefty fee for this vital information, but there's no charge to window-shop.

OTHER SOURCES

Following are the Internet addresses of publishers, government organizations, and exchanges that deal with futures. Also shown are products and services that you may find useful.

Books

At the end of each chapter, 1 through 15, we listed the names of a few selected books. We consider these the best sources for readers who want to delve further into the subject. We also provided the names and mailing addresses of the books' publishers.

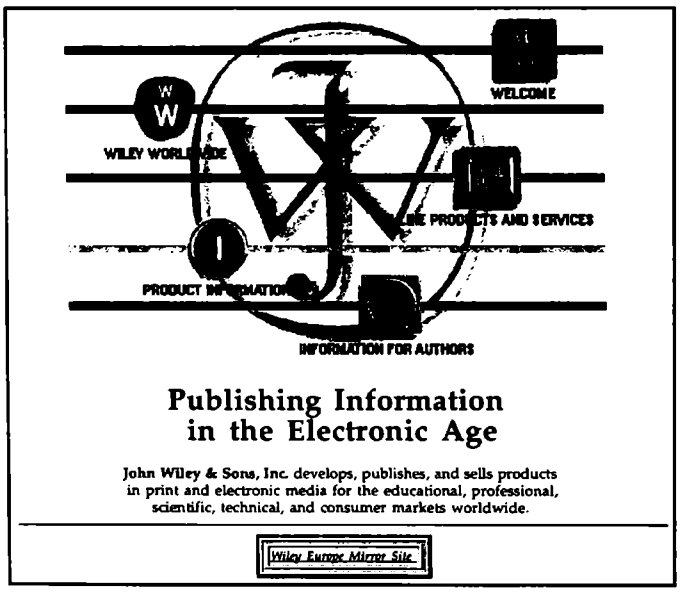


Figure 20 The Internet home page of John Wiley & Sons, publishers.

To get more information about these particular books and the full picture of what else the publisher offers, you can visit the publisher's site on the Internet. Following are the major publishers of futures and options titles:

John Wiley & Sons http://www.wiley. com/

John Wiley & Sons has more futures titles than any other publisher. The general catalog contains a list of all the books and journals published by Wiley. The only pertinent journal is *The Journal of Futures Markets*, an academic quarterly.

For a shortcut to the some 50 books on futures and options, use:

gopher://ns1.infor.com:7000/1.browse

and click down through Social Sciences, Finance, and Commodities.

Books are listed by author, subject, and series. Shown for each book are a synopsis, a table of contents, price, author's name, a note as to the kind of reader the book would appeal to, and how to order.

There is also a display of Wiley's best-selling books and upcoming releases in this subject area.

New York Institute of Finance nestegg.iddis.com/nyif.html

NYIF's online bookstore may be scanned by title or author. Each title has a full page. Presented are a synopsis of the book, author's name, book publication date, and price. In many cases, a color photo of the book's cover is shown. "Backlist" provides similar information for old standards, omitting the synopsis.

The New York Institute of Finance also offers seminars and correspondence courses on a wide range of financial topics.

Books can be ordered by mail, phone, or directly from the Web site.

McGraw-Hill http://www.mcgraw-hill.com/

McGraw-Hill's catalog of some 9000 book titles can be browsed by series or classification; or, it can be searched by keyword, author, title, subject, table of contents, or a combined category of author-title-subject. (We found that the last one works best.)

Individual book listings show author's name, table of contents, price, a good description of the book, and its target audience. Books may be ordered online or via an 800 telephone number.

Topical Information

Futures magazine http://www.futuresmag.com

As you saw above, several roads lead to *Futures* magazine. The complete current issue of this monthly magazine is presented online.

For back issues, a table of contents and thumbnail descriptions of feature articles are provided. You can also examine selected articles and special issues of the magazine, like the annual directory. There's information for persons who are new to futures.

Other products and services, available by fee or subscription, include books, videos, study courses, advisory services, brokerage services, money managers, a futures newsletter, conference and workshops, and a proprietary futures trading system.

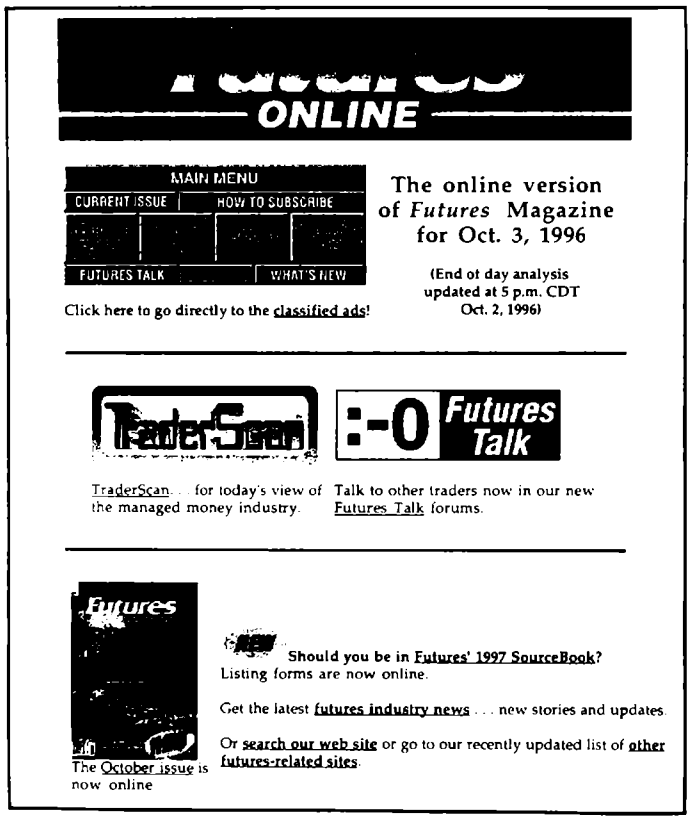


Figure 21 The entire current issue of *Futures* magazine is presented free online.

BARRON'S http://www.barrons.com

This is one of the most informative, best organized Internet sites we have seen.

The editorial content of the current issue of BARRON'S is presented in full. It is possible to call up features, columns, and news from anywhere in this weekly, tabloid-sized newspaper. Although there is not a great deal of data about futures and options, two regular columns, "Commodities Corner" and "The Striking Price," would be of interest.

BARRON'S Archives allows you to search back issues.

There is no charge to explore BARRON'S Web site, but to gain entry you must indicate your acceptance of a subscriber agreement and provide BARRON'S with some general information about yourself and a password that you choose.

Knight-Ridder Financial* http://www.krf.com/crb/

Commodity Research Bureau (CRB) provides at no charge the daily value for the cash CRB Index, its subindexes, and changes from the previous trading session.

Other products and services, available by fee or subscription, include customized daily high, low, and settlement prices for each market; historical price data provided on CD-ROM; a daily electronic futures trend analyzer; a weekly price chart service with summarized government data and technical commentary; a weekly fundamental advisory letter; and the *Commodity Year Book*.

Wall Street Journal http://wsj.com

The site presents the Interactive Edition of the *Wall Street Journal*, but the information is available only to its subscribers. (You can subscribe online; there's a 2-week free trial.)

The Money and Investing section provides daily futures and options prices, cash prices, and oil statistics. Also shown are current money rates, Treasury quotes, Federal Reserve data, and foreign exchange rates.

A searchable archive covers every story printed in the newspaper during the previous 14 days. The archive may be entered with a keyword, a company name, or a specific topic.

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*Knight-Ridder Financial changed hands on July 26, 1996 and is now known as BRIDGE Information Systems. This URL may have been changed to reflect that.

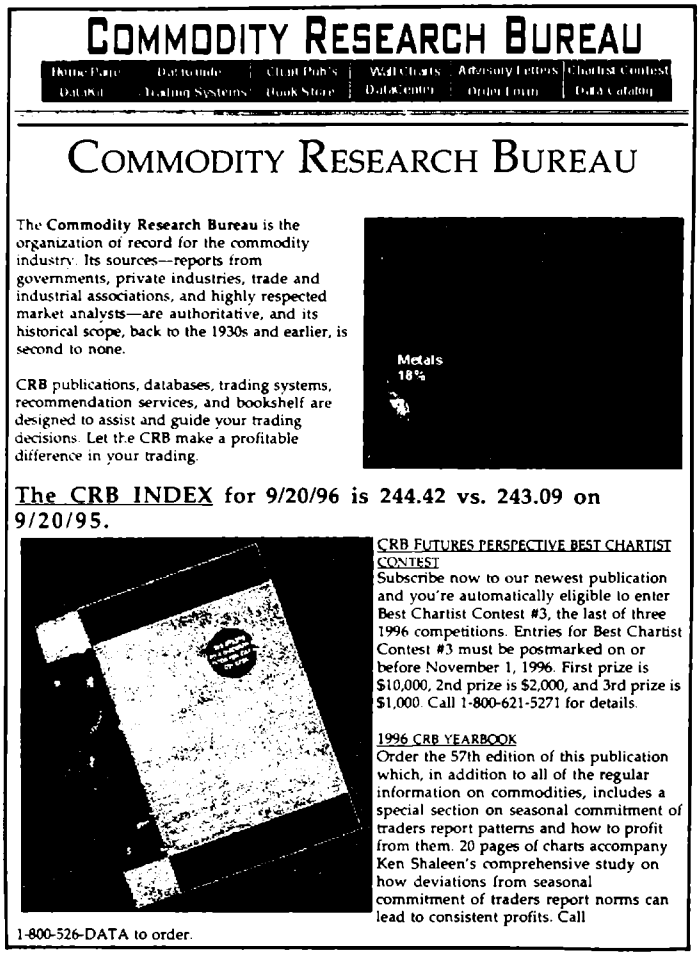

Figure 22 Home page of CRB, which publishes many futures products, including the charts used as examples in this book.

Government Organizations

Certain agencies of the federal government gather and disseminate information that can be used in the fundamental analysis of individual futures markets.

Chief among these is the Department of Agriculture. Also worth investigating are the Department of Commerce, the Commodity Futures Trading Commission, the U.S. Geological Survey, and the Federal Reserve Board.

Following is a list of these agencies and what they offer.

Commodity Futures Trading Commission http://www.cftc.gov/cftc

The Commitments of Traders Report (COT) is reported regularly by several wire services (Reuters, Knight-Ridder, Bloomberg) and is also offered by some private vendors for a fee. The only way COT and associated information can be received directly from the CFTC is via the Internet.

The current COT is broken down into three levels: midwestern and eastern markets, individual exchanges, and individual commodities. A separate report shows deliveries made against CBOT T-bond and T-note futures contracts.

Historical COT reports are also available. For futures only, data cover from 1986 to present; for futures and options, data are available from 1995.

Other CFTC publications include a discussion of the economic purposes of futures trading, an overview of the CFTC, advisories on administrative decisions and actions, and sanctions currently in effect.

U.S. Department of Commerce http://www.doc.gov

The Commerce Department Web site is a labyrinth, but holds rewards for the patient browser.

Information is presented on international trade conditions, U.S. export strategy, the importing of goods and services into the United States, the business climate in other nations, and trade statistics broken down by country or industry sector.

There is an Internet library with publications on trade subjects, and a newsletter containing foreign and domestic economic news. There are also direct links to other related sites, like the U.S. International Trade Commission and the World Trade Organization.

The department's **Census Bureau** can be reached directly at:

http://www.census.gov/

The Census Bureau maintains a list of the U.S. economic indexes that you hear mentioned in the news from time to time. Updated each month, the list includes building permits and housing starts, consumer installment credit, new home construction, new home sales, manufacturing, money supply, foreign trade, consumer and wholesale prices indexes, interest rates, index of leading economic indicators, and Gross Domestic Product.

Closely related is the **University of Michigan Bulletin Board**, which displays information on the U.S. economy gathered primarily by the Com-

merce Department's Office of Business Analysis. Included in the bulletin board are:

- ✔ Current yields and historical information on municipal securities, certificates of deposit, Treasuries, and Fed funds.
- ✔ Most recent U.S. Treasury auction results.
- ✔ Foreign trade (data on imports, exports, and exchange rates).
- ✔ Energy statistics broken down by usage, stocks, and locale.
- ✔ Economic indicators (housing starts, inventory levels, consumer prices, building permits, leading and lagging indicators, index of industrial production).

The URL for the University of Michigan Bulletin Board is:

gopher://una.hh.lib.umich.edu:70/11/ebb

U.S. Department of Agriculture http://www.usda.gov

The three divisions of USDA of most interest to futures markets participants are:

Economic Research Service	http://www.econ.ag.gov/
National Agricultural Statistical Service	http://www.usda.gov/nass/
Foreign Agricultural Service	http://www.fas.usda.gov/

The Economic Research Service (ERS) analyzes current agricultural situations and forecasts market conditions. The World Agricultural Outlook Board (WAOB), which is within ERS, issues regular forecasts of U.S. and world supply and demand prospects for major agricultural commodities.

The National Agricultural Statistical Service (NASS) estimates and reports on the production, stocks, inventories, disposition, utilization, and prices of agricultural commodities.

The Foreign Agricultural Service (FAS) collects, analyzes, and disseminates information about global supply and demand, trends in world trade, and overseas markets for U.S. agricultural products.

Each service's home page offers a catalog of individual products and services. Each has a provision to search the site by keyword or subject. But each also offers something unique.

The ERS catalog shows the name and phone number of the person in USDA who is responsible for each commodity. There is a special category

Figure 23 Foreign Agricultural Service is one of 3 main USDA Internet sites with futures information.

of agricultural reports just off the press and those that have become favorites over the years.

NASS also provides you with:

- ✔ The date of each USDA crop report, by month.
- ✔ Crop weather, crop progress by state, and such information as projected good field working days and current level of crop maturity.
- ✔ Color charts of prices received and paid over the past 8 to 10 years by individual futures contract and by market group.

- ✔ Agricultural statistics for all crops for the past year and summary data for the past 12 years.

FAS's unique offerings include:

- ✔ Analysis of global supply and demand.
- ✔ Data on exports and imports.
- ✔ Foreign buyers' list.
- ✔ Trade leads for government agencies and companies that do business overseas.
- ✔ Agricultural conditions in individual foreign countries.
- ✔ Satellite imagery analysis to determine overseas weather, growing conditions, and crop progress.
- ✔ Periodic reports on world markets and trade in cotton, dairy livestock and poultry, grains, oilseeds, sugar, and wood.

All NASS reports and ERS situation and outlook reports are available electronically within 3 hours of their release. The URL for Internet access to the reports is:

http://usda.mannlib.cornell.edu/usda

As discussed in Chapter 16, NASS and ERS agricultural reports and studies are also available by AutoFAX, bulletin board, e-mail, and the U.S. Postal Service.

Call 1-800-999-6779 for a free NASS-ERS report catalog and annual calendars showing report release dates.

U.S. Geological Survey http://minerals.er.usgs.gov:80/minerals/

The Bureau of Mines lost its funding in 1996, and many of its functions were transferred to other agencies. The responsibility for minerals information was moved from the Bureau of Mines to the U.S. Geological Survey (USGS). *Minerals Information* focuses on the worldwide supply, demand, and flow of minerals.

To go straight to a commodity search of the minerals information available, use:

http://minerals.er.usgs.gov:80/minerals/pubs/commodity/myb/

A search of this site by commodity name will lead you to a list of publications dealing with gold, silver, platinum, and copper. The publications

include annual and monthly summaries of production, distribution, stocks, and consumption of each mineral commodity; a yearbook showing economic and technical trends in minerals in the United States and abroad; periodic special reports providing a close look at a single metal; and a monthly newsletter. Also provided is the name and phone number of the person to contact at USGS.

Publications are available online, by fax, via the U.S. Postal Service, and in some cases on CD-ROM. To read or print out the information online, you need Adobe Acrobat Reader. It can be downloaded free at the site.

At this writing, it is still possible to gain access to the Bureau of Mines archives through the Department of the Interior at:

http://www.usgs.gov/doi/doi.html

The Bureau of Mines archives contain thousands of research publications on the supply, demand, production, usage, and prices of the metals that have futures markets. Adobe Acrobat Reader is required here also.

Federal Reserve Board http://www.bog.frb.fed.us

Provided at the Fed's Internet site are a calendar of upcoming Federal Open Market Committee (FOMC) meetings, where national interest rate policy is formulated. Also available are the minutes of the past four meetings.

The "Beige Book," published quarterly, can be perused online; it contains commentary on current economic conditions in each Federal Reserve district. You can also look over the previous quarter's edition.

Links to related Web sites include the Federal Reserve Banks, Federal Deposit Insurance Corporation (FDIC), and Office of the Comptroller.

Information of greatest interest to futures market participants is found on the Fed's bulletin board at the Department of Commerce. It displays Federal Reserve data for the following subjects and update intervals.

- ✔ Aggregate reserves (weekly on Thursday).
- ✔ Factors affecting reserves (weekly on Thursday).
- ✔ Money stock (weekly on Thursday).
- ✔ Foreign exchange rates (weekly on Monday and monthly).
- ✔ Selected interest rates (weekly on Monday).
- ✔ Industrial production and capacity utilization (Monday and mid-month).
- ✔ Consumer installment credit (Monday and fifth business day).

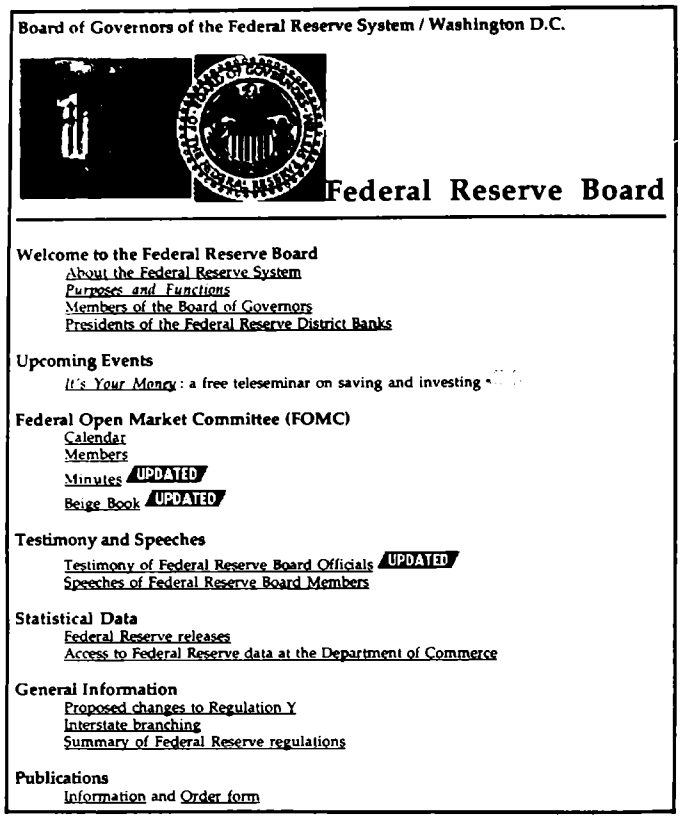

Figure 24 Home page of the Fed.

Futures Exchanges

The exchanges are the greatest single fount of information about themselves and the futures contracts they trade.

The list of what each exchange offers to Internet browsers is changing constantly. The best way to find out what's available is to key into the source yourself and explore the site.

Following are some of the features that exchanges may offer on their Internet pages:

Free futures and options price quotes: Intraday quotes; daily opening, high, low, and closing prices; and time and sales data.

Market commentary: Remarks, recorded or live, focusing on individual futures markets and the fundamental forces currently affecting

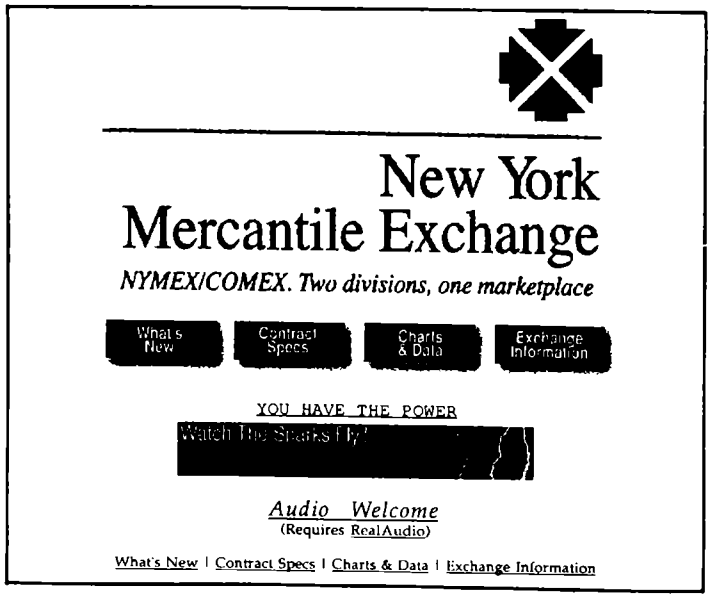

Figure 25 NYME is home to futures contracts on platinum, palladium, and 4 petroleum products.

them. Included, if applicable, are levels of deliverable stocks and an account of actual deliveries of physical commodities made during the period.

Volume and open interest: Volume and open interest levels for each contract month and each futures market.

Technical analysis: Commentary on significant technical factors in each market. Presentations discuss price support and resistance levels, current trends, and projected price turning points. Analysis may include bar charts, point-and-figure charts, candlestick charts, on-balance volume, relative strength, moving averages, and stochastics.

Background information on each futures market: Where the commodity is produced, its major users, the factors that affect its supply and demand, the substitutes it has, the importance of hedgers, and how crop yields are determined.

Current cash prices for each commodity: Prices based on actual cash transactions at exchange-designated geographic locations that day.

Export data: Quantity and destination of commodities shipped overseas.

Current crop data: Planting, progress, condition, value, and expected yield.

Contract specifications: Detailed description of exchange specifications for each futures contract, including contract quantity, delivery months, last notice day, last trading day, exchange-designated delivery points, grades acceptable for delivery, and premiums or discounts for substitute grades.

USDA crop reports: Report data and analytical commentary, provided soon after the report is officially released by the U.S. Department of Agriculture.

CFTC data: Most recent *Commitments of Traders Report.*

Education: A listing of the books, brochures, pamphlets, and videotapes the exchange makes available about its products and services. Date, location, and tuition for domestic and foreign classroom sessions on futures and options.

Membership: Data about the number and diversity of members, membership history, and the most recent price at which a seat on the exchange was sold.

News: Newsworthy information about the exchange, its members, and the futures contract it trades.

Here are the URLs for the major U.S. futures exchanges:

Chicago Board of Trade	http://www.cbot.com
Mid-America Commodity Exchange (wholly owned affiliate of CBOT)	http://www.cbot.com
Chicago Mercantile Exchange	http://www.cme.com
International Monetary Market (division of the CME)	http://www.cme.com
Coffee, Cocoa & Sugar Exchange	http://www.csce.com
New York Mercantile Exchange	http://www.nymex.com
COMEX (a division of NYME)	http://www.nymex.com
New York Cotton Exchange	http://www.nyce.com
Financial Exchange (division of the NYCE)	http://www.nyce.com
New York Futures Exchange (subsidiary of NYCE)	http://www.nyce.com
Kansas City Board of Trade	http://www.kcbt.com
Minneapolis Grain Exchange	http://www.mge.com

OTHER ROADS

There are other Internet avenues to explore, depending on how far you want to travel.

We discussed only a few of the commodity-only brokerage firms; there are others that have Internet sites. Over time, the major futures commission merchants may expand their online coverage of futures.

Virtually every commodity has its own trade association; its site will have a great deal of information about that commodity, including its price, production, usage, supply, and demand.

A full directory search of the individual commodity name will lead you to many related sites. Some may not be germane, but others will. And it's likely to be information or data that you couldn't readily find elsewhere.

SUGGESTED READING

Internet and World Wide Web Simplified. IDG Books Worldwide, Forest City, CA, 1995.

Investor's Guide to the Net, Paul B. Farrell. Wiley, New York, 1996.

Appendix A

More Chart Patterns and What They Mean

TRIANGLES

Triangles come in more than one variety. The *symmetrical* triangle looks like the equilateral triangle you probably first met in freshman math, with all three sides and all three angles equal. It has some of the qualities of a rectangle. The difference is that the top and bottom sides of the pattern are not parallel but converge to a point at the right.

If the rectangle signifies a standoff between the bulls and the bears, the symmetrical triangle represents a pitched battle between them. With each rally, the sellers step in at a lower point to turn prices back. Each decline is met with buying at a higher level. The battle is over when one side finally prevails and prices break out of the triangle. Figure 26 shows an example.

When a symmetrical triangle interrupts a swift price move, it often marks the middle of that move. That is, the travel of prices beyond the triangle will be about equal to the travel of prices before the triangle.

The symmetrical triangle in Figure 26 turned out to be a reversal pattern, marking a major top in wheat futures.

There are two other kinds of triangles, and each contains a built-in indication of where prices are likely to go next. They are both right triangles. They are called *ascending* and *descending* triangles.

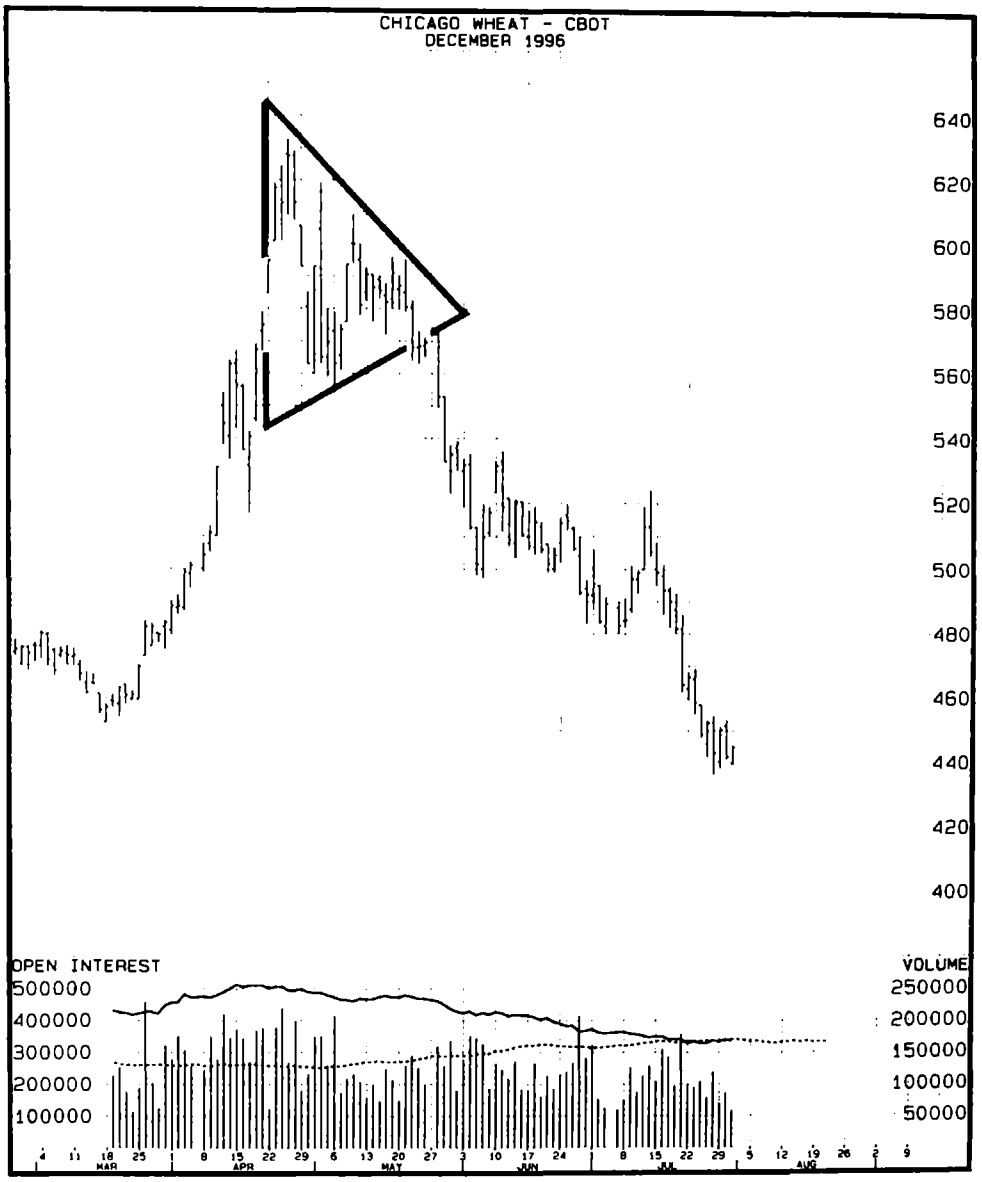

Figure 26 The symmetrical triangle is formed by two minor trendlines, one upward and one downward. Prices are typically squeezed toward the apex before breaking out of the pattern. This particular symmetrical triangle formed a market top. Chart courtesy of *CRB Futures Perspective*, a publication of BRIDGE Information Systems.

An ascending triangle has the flat side on the top. The rising line at the bottom of the triangle indicates that buyers are becoming increasingly aggressive, as they are stopping each decline at a successively higher level. Sellers are not stepping up their activities; rallies meet resistance and are turned back at about the same price each time. The pattern holds the promise that the confrontation will be won by the more aggressive bulls, when overhead resistance is finally overpowered.

Figure 27 shows a descending triangle pattern. Here the bears are the aggressors, as rallies are turned back at a lower price each time. When the

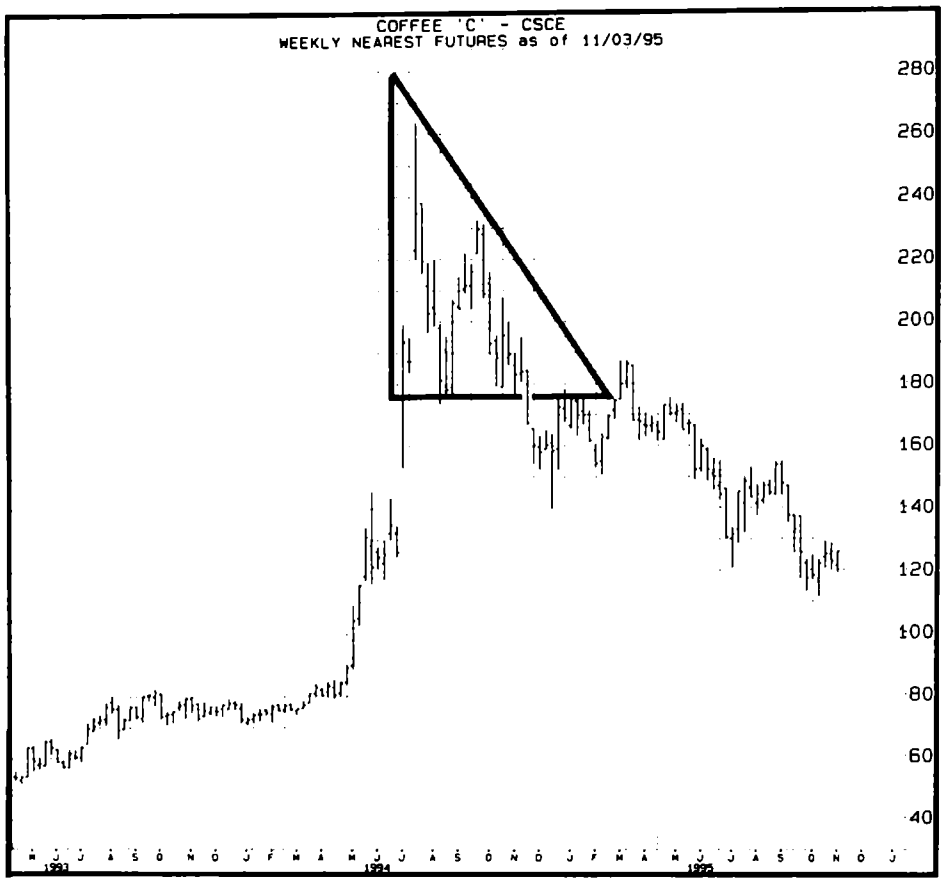

Figure 27 The descending triangle indicates that the bears are becoming increasingly aggressive; they are stopping each rally at a lower level than the previous one. The buyers, in the meantime, are just holding their own. The pattern presages a downside breakout, as was demonstrated in this weekly chart for coffee futures. Chart courtesy of *CRB Futures Perspective*, a publication of BRIDGE Information Systems.

reservoir of buying power at about $1.70 a pound was tapped out, coffee prices fell through the floor of the triangle and headed lower.

Triangles may mark either price reversal points or areas of price consolidation. As with rectangles, there are clues. A descending triangle at the end of a long upward price move would carry the presumption of a reversal pattern. An ascending triangle in an extended bear market would have a good probability of marking the bottom.

DOUBLE TOPS AND BOTTOMS

A double top occurs when an ongoing rally fails in an attempt to make a new high. The pattern is a harbinger of change. It symbolizes diminished buying power. After pushing prices to a succession of new peaks, the bulls have suddenly lost some of their strength. If, in the ensuing decline, prices should close below the intervening low, it would indicate that not only are the bulls getting weaker, but the bears are getting stronger. It is at that point that the topping pattern is considered complete.

A double bottom is the same pattern, inverted. After pushing prices relentlessly down to a series of new lows, the bears are unable to do it again. Prices stop instead at about the same level as the immediately previous decline. From that point they rally. When the intervening high is surpassed, the bottoming pattern is confirmed and a new uptrend begun. Double bottom patterns are not seen as often as double tops.

Figure 28 provides an example of a double top. A double bottom is shown in the T-bill chart in Figure 29.

EXPANDING TOPS AND BOTTOMS

An expanding top marks a major turning point. The price pattern looks like an unstable boat in rough water. Each new high is higher, and each new low is lower, until the market finally capsizes. There are generally five clearly visible turning points, starting with the first high. The pattern is considered completed when prices close below the low of the day on which the last high was made. On occasion there will be a sixth and seventh point before prices finally turn downward.

Figure 30 shows an example of an expanding top.

In an expanding bottom, the pattern is inverted. Expanding bottoms are rare.

Figure 28 A double top. Soybean prices peaked on May 23 at about $7.00 a bushel. When prices rallied back to the area 4 weeks later, they were unable to register new highs. The close below $6.35, the intervening low, completed the double top reversal pattern and ushered in a major decline. Chart courtesy of *CRB Futures Perspective*, a publication of BRIDGE Information Systems.

GAPS

A gap is a price range on the chart where no trading took place. If tomorrow's low price is higher than today's high price, the two price ranges will not overlap; white space would be left on the chart, and an upside gap would be formed. If today's high price is lower than yesterday's low, a downside price gap would be created.

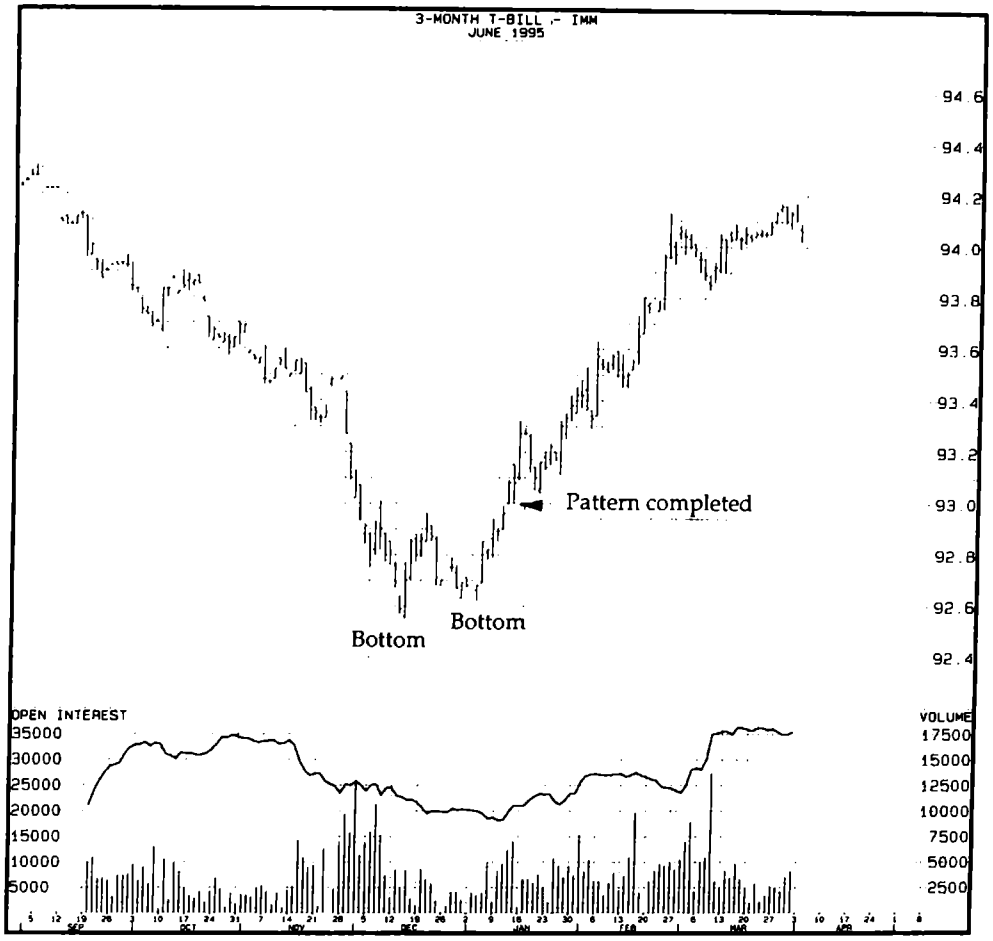

Figure 29 The December/January lows near 92.60 set the stage for a double bottom in T-bills. When prices closed above 92.95 (the intervening high) on January 10, a major trend change was established. Chart courtesy of *CRB Futures Perspective*, a publication of BRIDGE Information Systems.

Gaps are formed on the opening of trading. They are caused by the overnight buildup of orders in the pit and are not unusual. However, most of them are "closed" later in the day, as subsequent trading activity eventually moves through the empty price range, and the gap never appears on the chart.

Gaps that are not closed symbolize powerful forces. Look at Figure 31. The momentum in 1996 feeder cattle prices was clearly downward in the spring of that year. On April 29, an abrupt change in market psychol-

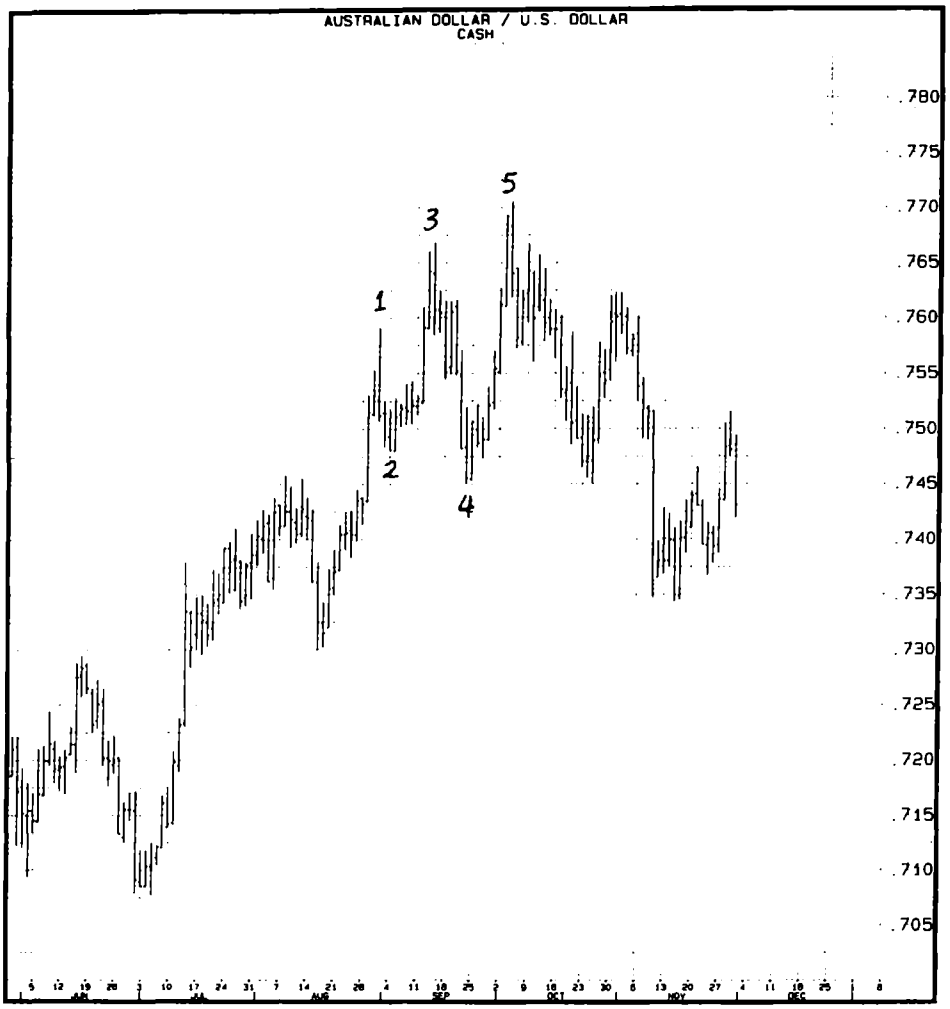

Figure 30 Expanding tops generally have five waves, but a sixth and seventh wave may occur before the market reverses course. The top is completed when prices close below the low of the day on which the high was registered. In this example, that was on October 5, at a price near .7580. Chart courtesy of *CRB Futures Perspective*, a publication of BRIDGE Information Systems.

ogy occurred. The bulls suddenly awoke. Prices gapped sharply upward and never looked back.

What causes the change in market psychology? It could have been any one of a number of factors: a report that indicated higher feed grain prices, indications of an increased demand for beef at home or abroad, an outbreak of disease among cattle.

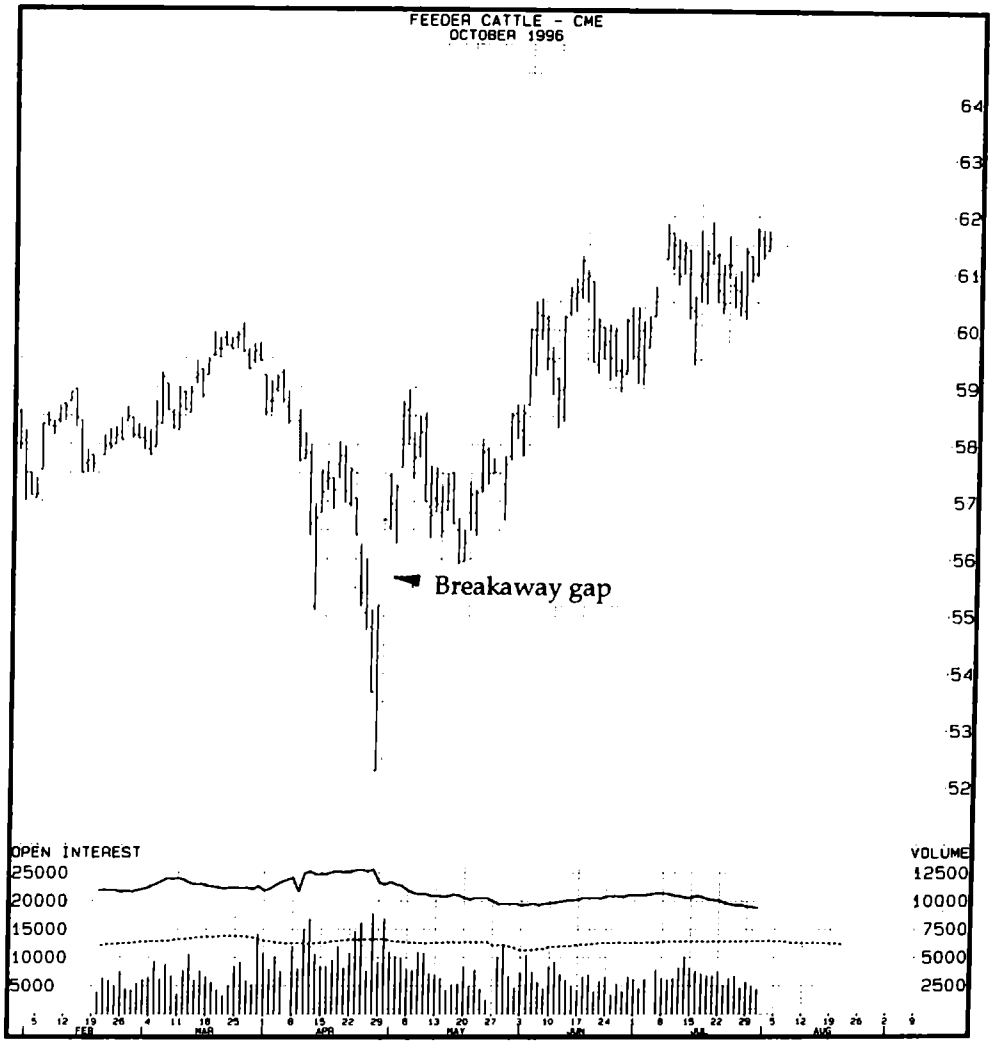

Figure 31 This wide "breakaway" gap in feeder cattle signaled a sudden awakening of bullish market forces. Chart courtesy of *CRB Futures Perspective*, a publication of BRIDGE Information Systems.

Whatever the cause, it was not ephemeral; the ensuing rally lasted 3 months and carried all the way to 62 cents a pound.

It is not unusual for prices to create a gap when leaving an established chart pattern. It's as if they need the extra inertia to break clear, like a rocket leaving the earth's gravity. A gap in this position is referred to as a *breakaway* gap (Figure 31).

Figure 32 shows a different kind of gap. From June to mid-August, prices for March 1995 cotton were in an established downtrend. Then

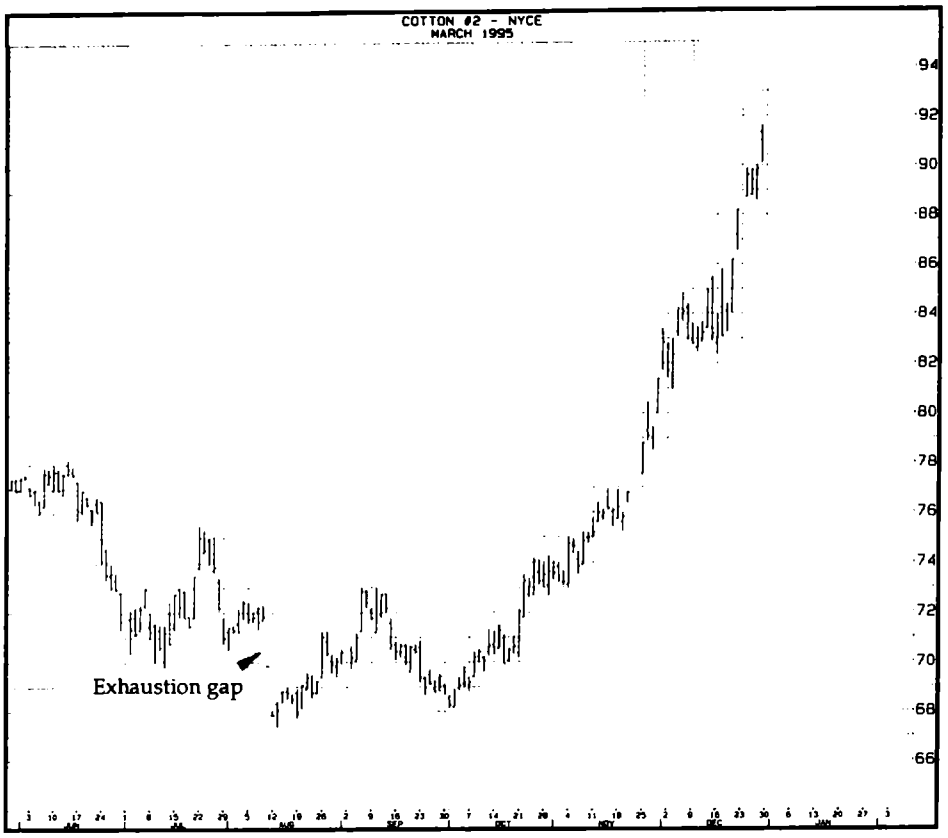

Figure 32 Consecutive limit-down days in mid-August created a wide "exhaustion" gap, a sign that the bears were tiring. The small gains that followed led eventually to a double bottom reversal pattern and a 3-month rally to new contract highs. Chart courtesy of *CRB Futures Perspective*, a publication of BRIDGE Information Systems.

there was sudden blowoff. On August 15 and 16, prices gapped sharply downward on extremely high trading volume.

It was the bears' last lunge. The following day, the market began to inch upward. Within 4 months, prices had advanced 33 percent from their August lows.

Appropriately, these are called *exhaustion* gaps. An exhaustion gap has two special qualities: It is usually found at the end of a relatively sustained price move, and it is the widest gap on the chart.

The final category comprises gaps that are formed near the middle of extended price moves. Called *measuring* gaps, they are not as common or considered as reliable as breakway or exhaustion gaps. Figure 33 is an ex-

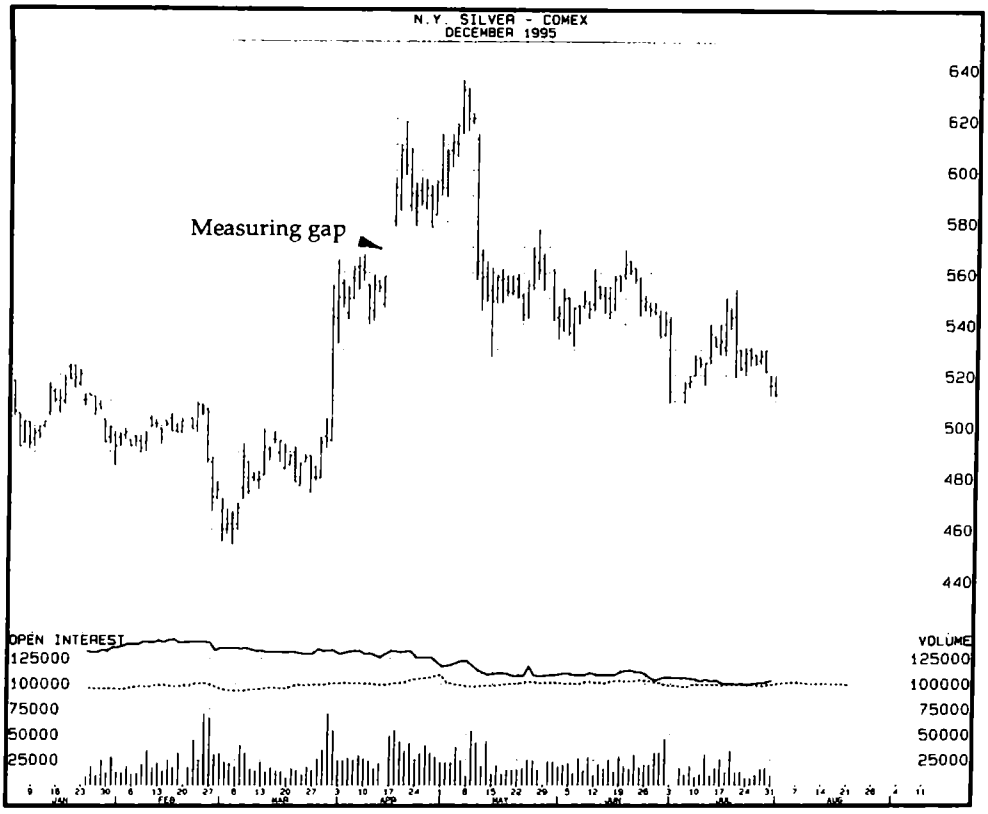

Figure 33 The upside price gap that formed in silver futures in mid-April turned out to be of the "measuring" kind. That is, it occurred almost exactly in the middle of the sharp rally from $5.00 to $6.35 per ounce. Chart courtesy of *CRB Futures Perspective*, a publication of BRIDGE Information Systems.

ample of a measuring gap that kept its promise. The upward move in silver began in late March at a price of $4.80. The big gap formed on April 17 embraced a price level of $5.65, the halfway point in a sharp rally.

Some other incidental intelligence: For a gap to be significant, its presence must be unusual; charts of thinly traded markets are full of gaps that mean nothing. The gap should also be unusually wide. The price action immediately following the gap is also important. If the gap is closed in the next day or two, it's a sign that the buyers or sellers who created the gap may not have sufficient numbers to keep the price move going, and the gap's significance would be reduced. As we mentioned earlier, gaps may also provide support and resistance, but their performance in this regard is erratic.

UNUSUAL REVERSALS

Among the annals of price chart patterns, island reversals may well be the most dependable. Unfortunately, they are quite rare. The island is formed by a pair of price gaps. Prices gap to new highs or lows, trade in that area for a day or two, then immediately gap sharply in the other direction. The day or two of intervening price action is left floating in white space, an island that marks a market turning point.

Figure 34 shows a 1-day island reversal that marked the summit in February 1995 heating oil. The stage was set on August 1, with an upside (exhaustion) gap. The next day, falling prices left a downside gap in their wake, and the island reversal was formed. The ensuing decline was still intact at Christmas.

Figure 34 Although it doesn't show on this chart, the 1-day island reversal on August 1 ended a sustained 5-month rally in heating oil futures. Chart courtesy of *CRB Futures Perspective*, a publication of BRIDGE Information Systems.

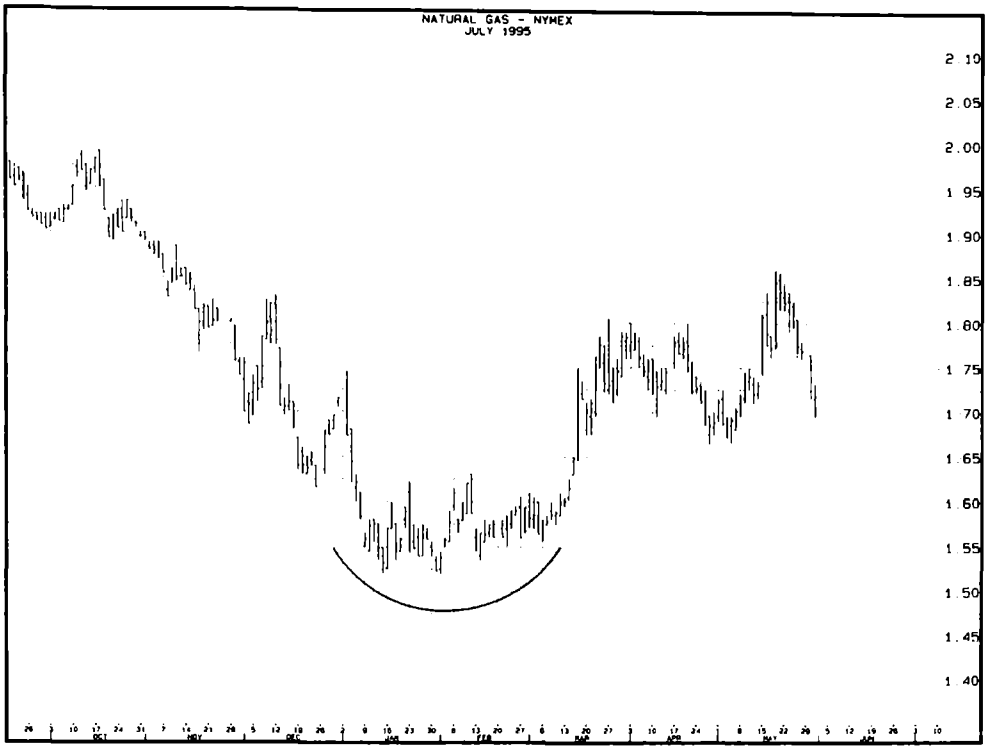

Figure 35 Found more often in conservative stocks than in futures, the so-called "rounding" bottom signals a gradual change in momentum from bearish to bullish. Chart courtesy of *CRB Futures Perspective*, a publication of BRIDGE Information Systems.

Some trends end not with a bang but with a whimper. An example can be seen in July 1995 natural gas (Figure 35). After a quiet descent over a period of 8 months, downward momentum eased in early January. Prices moved sideways for a couple of months, then gradually bent around to the upside. The result is a saucer-shaped pattern, sometimes called a "rounding bottom" by technicians.

Another seldom-seen chart phenomenon is the "head-and-shoulders" reversal pattern, which can be found at market tops or market bottoms.

An example of a head-and-shoulders top is shown in Figure 36. Prices form the left shoulder and head with what look like just two more new highs and normal pullbacks in an ongoing uptrend. The first suspicion of a reversal is raised when the rally in early January fails to reach a new high. When prices break down through the "neckline" drawn across the pattern's lows, suspicions are confirmed; the reversal formation is completed.

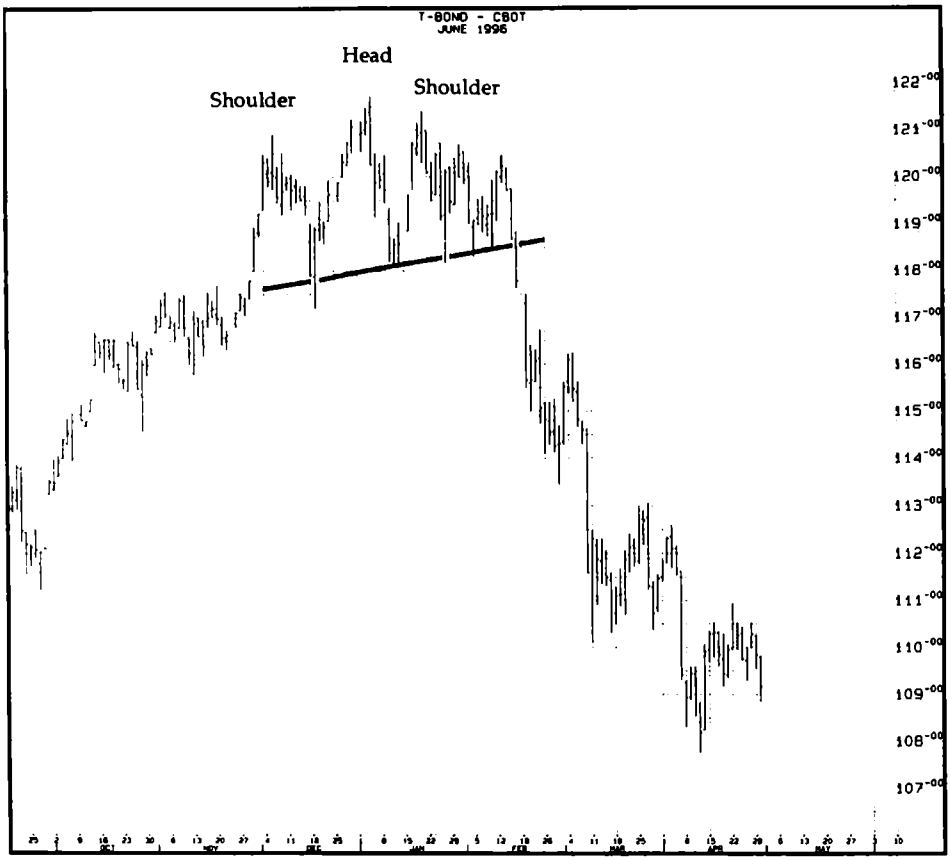

Figure 36 The "head-and-shoulders" top is completed when prices break down through the "neckline" drawn across the pattern's consecutive lows. This one, which also marked an all-time high in T-bond future prices, provided the jumping-off point for a major downtrend. Chart courtesy of *CRB Futures Perspective*, a publication of BRIDGE Information Systems.

Appendix B

More About Point-and-Figure Charts

To give you a better idea of how a point-and-figure chart works, let's build an actual point-and-figure chart from scratch. We'll use T-bill futures, a box size of 10 points, a three-box reversal, and the following prices:

Day	*High*	*Low*	*Close*
1	91.20	90.96	91.00
2	91.55	91.10	91.30
3	92.02	91.78	91.95
4	91.95	91.72	91.87
5	91.63	90.92	91.41
6	91.23	91.02	91.03
7	91.18	90.92	91.05
8	91.63	91.22	91.47
9	91.44	90.84	91.12
10	90.84	90.65	90.71

We'll begin our chart with Day 1. Looking back over the price action of the previous few weeks, we see that an advance is under way; so we'll

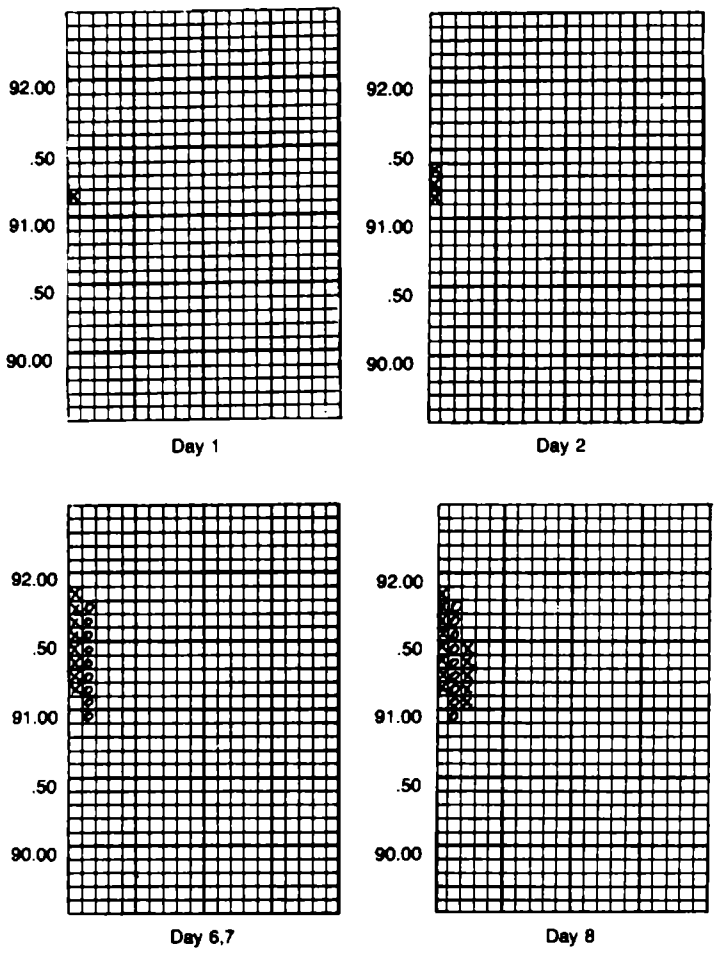

Figure 37 Ten days in the life of a point-and-figure chart. Prices are in the table on page 262. The arrow on day 9 marks a point-and-figure "sell" signal—when the present column of Os drops one space below the immediately previous column of Os.

start by plotting Xs. We put an X in the 91.20 box, the high on Day 1 (see Figure 37).

After the close the next day (Day 2) we update our chart, using that day's low and high prices. The first thing we look for is a possible reversal. There was none. The low on Day 2 was 91.10. That's only one box below yesterday's high of 91.20. According to the rules we set up ourselves for this chart, the daily low must be at least three full boxes below the most re-

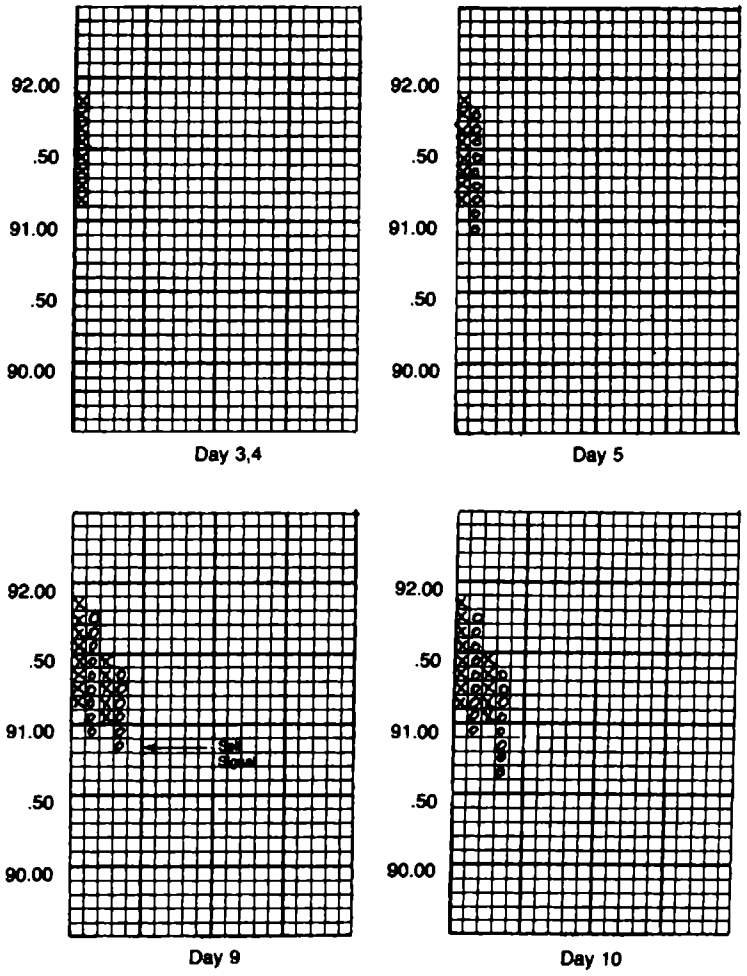

Figure 37 *(Continued).*

cent high before it is considered a reversal. We then check to see if there was a new high. There was, at 91.55. Staying in the same column, we put an X in the 91.30 box and an X in the 91.40 box. We do not put an X in the 91.50 box because it was not completely "filled"; that is, prices did not completely traverse the 91.50 box but stopped in the middle of the box at 91.55.

The rally continues. After the close on Day 3 we again update our chart. We look first for a possible reversal. Again, there was none. We next check the day's high price. It was 92.02, a new peak. To record the advance, we

add five Xs to the chart: in the 91.50 box, the 91.60 box, the 91.70 box, the 91.80 box, and the 91.90 box. We make no mark in the 92.00 box because prices did not reach the upper boundary of that box at 92.10; they stopped at 92.02.

The next day (Day 4), the high and low prices are 91.95 and 91.72. We check for a possible reversal. The low of 91.72 is only one box below 91.90, the highest X. There was no reversal. The high of 91.95 is below yesterday's high, so no X is added to the column. As a result, *nothing* is added to the point-and-figure chart this day.

The following day (Day 5), the high and low are 91.63 and 90.92. The low of 90.92 is nine boxes below our highest X at 92.00. That more than meets our three-box criterion for a price reversal. We move one column to the right and, starting with the 91.80 box, we add Os down to and including the 91.00 box. We don't put an O in the 90.90 box, because the decline stopped at 90.92; approaching it from the top, prices didn't completely "fill" the 90.90 box.

Our point-and-figure chart has just recorded a change in the price trend from up to down.

On Days 6 and 7, the lower trend continued. However, no entry was made on either day because there was no new low. On Day 8, the high price was 91.63. That exceeds our three-box reversal criterion, so we move one column to the right and put Xs in the 91.10 box, 91.20 box, 91.30 box, 91.40 box, and 91.50 box. For an X in the 91.60 box, prices would have had to reach 91.70 or beyond; the rally stopped at 91.63, so we leave the 91.60 box empty.

Prices turn down again on Day 9, creating a reversal to the downside and causing Os to be placed in the boxes for 91.40, 91.30, 91.20, 91.10, 91.00, and 90.90. The decline continues on Day 10, when the 90.80 and 90.70 boxes receive Os.

We would continue to plot Os in this column until we observe a daily high that is at least three full boxes above the lowest O. That would be an indication that the trend had reversed back to the upside; we would move to the next column to the right and start to plot Xs.

ADJUSTING VALUES

Because you select the box size and reversal criterion yourself, it is possible for you to fine-tune the point-and-figure chart. The smaller the box size, the more sensitive the chart is to price changes. The smaller the re-

versal criterion, the greater the number of trend changes that will be signaled. For volatile markets, you would use relatively large box sizes and reversal criteria, so the chart would ignore jittery short-term price fluctuations. In a quieter market, you would use smaller values, to pick up the more subtle price movements.

The key is to strike a happy medium. What you want your point-and-figure chart to do is to send you a signal when the underlying price trend has changed but ignore as much as possible the minor price changes that do not affect the present trend. Selecting the values to be used in a point-and-figure chart is as much art as science and is accomplished mainly by trial and error.

TRADING SIGNALS

Point-and-figure charts have another attribute not found in bar charts: Point-and-figure charts can give "buy" and "sell" signals. A simple point-and-figure sell signal occurs when the column of Os currently being plotted falls below the immediately preceding column of Os, as shown on Day 9 in Figure 37. A buy signal is given when an ongoing column of Xs tops by at least one box the immediately preceding column of Xs, as in Figure 38. Point-and-figure chartists recognize and use several other price patterns in making their trading decisions, but most are a variation on these simple buy and sell signals.

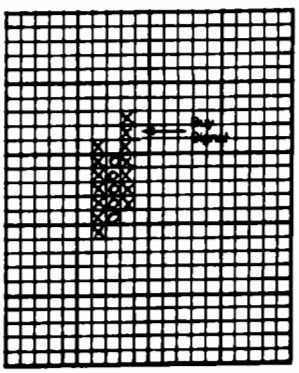

Figure 38 A point-and-figure "buy" signal occurs when a column of Xs rises one box above the immediately previous column of Xs, as in this chart excerpt.

OPTIMIZING

Technical analysts use computers to reconstruct past market activity and test trading theories. The underlying assumption is that a trading system that worked well in the past will work well in the future. Some analysts sell their findings in the form of proprietary trading methods, providing specific point-and-figure box sizes and reversal criteria that have worked well in certain markets over recent months. The process is called "optimizing" because it seeks the optimum balance between the values that produce the greatest profit and the values that produce the smallest loss.

The problem is, of course, that today's price behavior may not resemble yesterday's price behavior at all. Factors that affect prices are almost countless and in constant change. The conditions that caused a $^{7}/_{32}$ box and five-box reversal to work well for T-bonds last month, for example, may not be repeated this month or ever again.

Appendix C

More About Moving Averages

WEIGHTED MOVING AVERAGES

All prices are not all of equal importance. Yesterday's price is likely to be a better indication of current market sentiment than last week's price, and last week's price more indicative than the price a month ago. On this thesis, some technicians weight the various closing prices, assigning higher values to more recent prices. A typical weighting system for a 5-day moving average would be:

1 . . 2 . . 3 . . 4 . . 5

That is, today's closing price would be multiplied by 5, the previous day's closing price multiplied by 4, the day before that multiplied by 3, and so on back to 5 days ago. The totals are then summed and divided by the sum of the weights.

To take an example, suppose the "prices" for the last 5 days were 17, 20, 22, 23, and 24. The simple average would be the sum of those numbers (106) divided by 5, or 21.2. The weighted average, using the weighting system described before, would be:

Day	*Price*	×	*Weight*	=	*Weighted Daily Value*
5	24	×	5	=	120
4	23	×	4	=	92
3	22	×	3	=	66
2	20	×	2	=	40
1	17	×	1	=	17
			15		335 ÷ 15 = 22.3

The weighted 5-day average (22.3) is higher than the simple 5-day average (21.2) because the more recent prices are higher, and by design they have a greater influence on the outcome.

This is only one example. Weights may be assigned to any number of days and in any amounts.

The ultimate in weighting is called an *exponential* moving average. The recent days still get the most emphasis, but every day back to the start of the calculations is given some mathematical recognition. The technique was developed for use in antiaircraft fire control during World War II, to forecast the position of a moving target.

To get an exponential moving average started, you need an initial value. For this you could use the simple average of closing prices over the past several days; say, 10 days. This value is plugged into the formula:

$$MN = MO + C(P - MO)$$

where

MN = the new moving average
MO = yesterday's moving average
P = today's closing price
C = a smoothing constant

Each day the calculation is made again, using the previous day's exponential moving average for MO.

The key is C, the smoothing constant. It is always a number between 0 and 1. The smaller it is, the more days are included in the exponential moving average. For example, if a constant of .05 is used, the past 44 days have about 90 percent of the total weight. With a smoothing constant of .20, the past 10 days have about 90 percent of the total weight, and with a constant of .40 the past 4 days have 90 percent of the total weight. The value of the constant must be chosen by the technical analyst to fit the character of that particular market.

TRADING WITH MOVING AVERAGES

The simplest approach to trading with a single moving average is:

When the daily closing price is about the moving average, be long.
When the daily closing price is below the moving average, be short.

For example, suppose you had just begun to keep a 3-day moving average, and the prices of the past several trading days were as shown in the table.

Day	*Closing Price*	*Three-Day Moving Average*	*Position*
1	89.50		
2	88.70		
3	87.25	88.50	
4	86.40	87.25	Go short
5	86.10	86.58	Stay short
6	85.90	86.13	Stay short
7	85.70	85.90	Stay short
8	86.30	85.97	Stay short
9	86.75	86.25	Cover short; go long
10	87.30	86.78	Stay long

On day 3, the first day that you can calculate a value for the moving average, the closing price is below the moving average value. Following the two rules previously mentioned, you take a short position on Day 4.

On Day 5 the closing price is still below the moving average, so you keep your short position. The same is true for Days 6 and 7. On Day 8, after the close, you see that a switch has occurred; the closing price has moved above the 3-day moving average. Following the rules, you close out your short position and take a new long position on Day 9. You keep the long position until the daily closing price drops back below the moving average.

These two simple trading rules keep you always in the market. There are other moving average methods that allow more time for the price trend to change. For example, some traders use two moving averages: one short term (e.g., a 5-day moving average) and one long term (e.g., a 20-day mov-

ing average). A long position is held when the price is above both moving averages. A short position is held when the price is below both moving averages. At all other times the trader is out of the market.

As with point-and-figure charts, technical analysts have identified the moving averages that worked best in certain markets in the past. Many have published their conclusions. These trading criteria suffer from a problem we have talked about before: They assume that today's markets will closely resemble yesterday's markets, and that may not be the case.

Appendix D

More About Stochastics and Relative Strength

We promised to tell you how the Relative Strength Index is calculated: The formula for finding relative strength is:

$$\text{Relative strength} = 100 \times \left(\frac{\text{RS}}{1 + \text{RS}} \right)$$

$$\text{RS} = \frac{\text{AU}}{\text{AD}}$$

AU = the total number of days in the last 14 trading days with higher closes

AD = the total number of days in the last 14 trading days with lower closes

To begin, you need 15 days of closing prices for the market you're interested in. To take a specific example, suppose that the most recent closing prices for December T-bond futures were:

101-11, 101-28, 101-20, 102-02, 102-21, 102-10, 103-05, 103-16, 102-30, 103-12, 103-29, 104-04, 103-20, 104-10, 104-18

Starting with the second price, we count the days in which prices closed higher than the immediately previous day. There are 9; that's the value for AU. The days in which prices closed lower than the immediately previous day total 5; that's the value for AD.

Now we can figure out the current relative strength of this market:

$$RS = \frac{AU}{AD} = \frac{9}{5} = 3.6$$

We go back to the first formula and plug the value of 3.6 in for RS:

$$\text{Relative strength} = 100 \times \left(\frac{RS}{1 + RS}\right), \text{ or}$$

$$\text{Relative strength} = 100 \times \left(\frac{3.6}{1 + 3.6}\right) = 100 \times \frac{3.6}{4.6}$$

$$100 \times \left(\frac{3.6}{4.6}\right) = 100 \times .782 = 78.2$$

The relative strength December T-bonds futures at the moment is 78.2. That's a high value, but it could be expected; prices had an obvious upward bias during the last 14 trading days.

To continue with the process, you would add the next day's closing price to the list, drop the oldest closing price off, and recalculate.

The data may be used in different ways. Many analysts consider a divergence between the direction of prices and the direction of the Relative Strength Index to be particularly significant. They plot daily relative strength values on a chart of daily prices for the same market, so any divergence between the two is immediately apparent.

When he introduced his Relative Strength Index in 1978, J. Welles Wilder chose a period of 14 trading days as the basis for his calculations because he considered that that period represented the normal distance between commodity price peaks and valleys, or half of the natural price cycle.

But that number is not sacred. It's possible that 14 days is not the half-cycle in the market you're studying and that, as with moving averages, factoring a larger or smaller number of days into the calculations would produce more accurate values for relative strength. The best number of days to use must be determined by the market analyst on a case-by-case basis.

Generally, if the actual half-cycle of prices is greater than the number of days chosen, RSI values will tend to be too high, and vice versa.

STOCHASTICS

We said earlier that closing prices in uptrends tend to cluster near the days' highs, and that in downtrends closing prices tend to cluster near the days' lows. As an ongoing trend loses its vigor, this behavior may change subtly. When a market is ready to turn from up to down, for example, the highs may still be higher, but closing prices often settle nearer to the lows of the day.

There are several stochastic indicators designed to determine market strength or weakness by evaluating the position of closing prices in the daily range. One of the earliest was the A/D (accumulation/distribution) oscillator, first published by Jim Waters and Larry Williams in an article in *Commodities* magazine some 20 years ago.

They began with two values, which they called *buying power* (BP) and *selling power* (SP). These are defined as:

BP= the day's high price minus the opening price
SP= the day's closing price minus the low price

These two values are plugged into the equation, where DRF means daily raw figure:

$$DRF = \frac{BP + SP}{2 \times (high - low)}$$

The maximum value for DRF is 1, which occurs when trading opens at the day's low and closes at the day's high. When the opposite happens—trading opens at the day's high and closes at the day's low—the value of DRF for that day is zero. All other cases will fall somewhere between zero and 1.

Suppose that the market we're looking at had on this day an opening price of 36.50, a high of 37.20, a low of 36.40, and a closing price of 36.85.

The DRF would be:

$$DRF = \frac{.70 + .45}{2 \times .80} = \frac{1.15}{1.60} = .718$$

When you have figured out the DRF for several days, the numbers can be plotted on a horizontal scale that runs from 0.00 to 1.00. Two horizontal lines are then drawn to cut off the extreme peaks and valleys. These lines will often fall near DRF values of 30 percent and 70 percent. The area

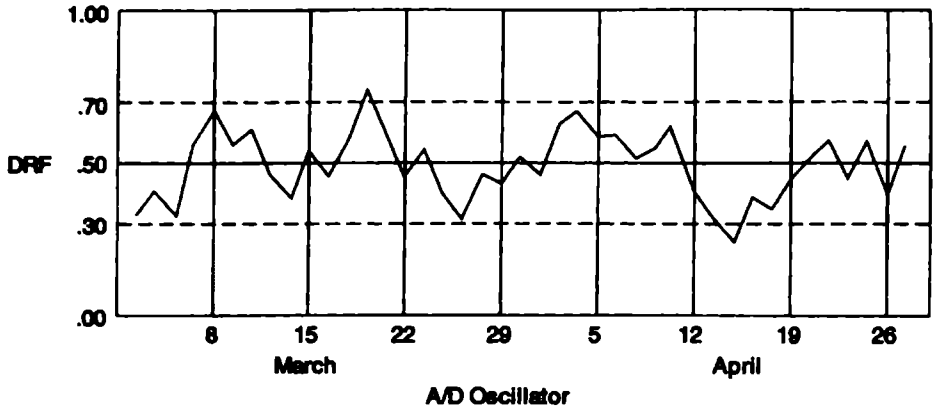

Figure 39 A typical A/D stochastic oscillator.

above the top line is considered "overbought" territory. When prices fall below the lower line, the market is deemed to be "oversold" or poised for a rally. (See Figure 39.)

A simple set of trading rules based on the A/D oscillator would be to close out all long positions and go short the day after DRF crosses above the top reference line, and to maintain these short positions until the day after the DRF falls below the lower reference line, at which time your position in the market is again reversed.

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